

The White Monastery Federation Project
Survey and Mapping at the Monastery of Apa Shenoute
(*Dayr al-Anba Shinūda*), Sohag, 2005–2007

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The Site

The White Monastery was an ascetic community for men near the Upper Egyptian cities of Sohag and Akhmim (ancient Panopolis), best known for its third leader, Shenoute of Atripe (348–465). It bears the name Dayr al-Anba Shinūda (the Monastery of St. Shenoute), but has been colloquially called Dayr al-Abiad (the White Monastery) since the time of the Arab historian al-Maqrizi (1364–1442), if not earlier.¹

✦ Elizabeth S. Bolman was the Executive Director of the White Monastery Project between 2000 and 2008. Darlene L. Brooks Hedstrom was the Field Director during that period, in collaboration with Peter Sheehan. Dawn McCormack performed the site survey with the assistance of Louise Blanke, Tracy Musacchio, and Mohammed Khalifa. Gillian Pyke was in charge of the ceramic and painted plaster analysis and documentation. The White Monastery Project is now under the leadership of Stephen J. Davis (Executive Director) and Gillian Pyke (Field Director). The work from 2005 through 2007 was supported by the National Endowment for the Humanities (Collaborative Research Grant), the Yale Egyptological Institute in Egypt (Simpson Fund), Dumbarton Oaks (Project Grants in Byzantine Studies), the American Research Center in Egypt (Antiquities Endowment Fund), Temple University, and Wittenberg University. Members of the White Monastery Project are very grateful for this support. The Expedition would like to acknowledge all the officials and representatives of the Supreme Council of Antiquities, both nationally and locally, who made this field season, the results of which are published here, possible. Special

It was part of a larger federation, which included a second men's community to the north at the nearby Red Monastery, a nunnery to the south in the village of Atripe, and a group of hermitages in the western

gratitude is extended to Dr. Zahi Hawass, Secretary General at the time of this work; Dr. Farag Fadah, Director of Islamic and Coptic Monuments; Dr. Magdi el Ghandour, then-Director of Foreign Missions; Dr. Mohammed Abdel Rahim, Director General of the Sohag Antiquities District in 2007; Mr. Saad Mohammad Osman, Chief Inspector, Dayr Anba Shenouda in 2007; Mr. Essam Abd El-Fatah, Mr. Mahmoud Abd El-Mobdi, and Mr. Gaber Ahmed (Dayr Anba Shenouda Inspectorate); and Mr. Galal Kebaisy Ali Ahmed and Ms. Nahla Gad ek-Krim ebd el-Al, Inspectors of Antiquities. We are grateful to our colleagues in the Sohag Inspectorate for their warm welcome and their willingness to share with our team their experience and ideas developed during previous periods of excavation. Special thanks go to Bishop Yohannes and the monks at the Monastery of St. Shenoute. Abouna Fam and Abouna Shenouda worked extremely hard to make our project a success. Father Maximous El-Anthony also deserves particular acknowledgement for all of his efforts to provide us with a well-functioning and expert local staff.

1 Al-Maqrizi, "Account of the Monasteries and Churches of the Christians of Egypt; Forming the Concluding Sections of the Khitat of Al-Maqrizi," in *The Churches and Monasteries of Egypt and Some Neighbouring Countries, Attributed to Abu Salih, the Armenian*, ed. and trans. B. T. A. Evetts (Oxford, 1895; repr. Piscataway, NJ, 2001), 317.

cliffs.² In 388/89, Shenoute inherited an institution that loosely followed the model of the Pachomian communal monasteries of Upper Egypt, although, as archimandrite, a post he held for several decades, he quickly established his own unique form of coenobitic monasticism.³ Shenoute's extensive writings in Sahidic Coptic provide scholars with the largest literary corpus from a late antique author in this language, with over 3,800 pages preserved. The surviving works, which include treatises, monastic rules, and sermons, are divided into nine volumes of *Canons*, which were addressed to specific monastic communities and contain rules of behavior, and eight volumes of *Discourses*, which are mostly homilies he presented to a combined monastic and lay audience.⁴ A very well preserved limestone

church built by Shenoute dominates the site. Plentiful remains of monastic life surround the church in limestone, fired brick, and mud brick, which date from the fifth to the fourteenth century.⁵ Since only a single church remains from the Pachomian communities,⁶

2 For an introduction to Shenoute and the White and Red Monasteries in monastic history see G. Gabra and H. N. Takla, *Christianity and Monasticism in Upper Egypt*, vol. 1, *Akhmim and Sohag* (Cairo and New York, 2006); C. Schroeder, *Monastic Bodies: Discipline and Salvation in Shenoute of Atripe* (Philadelphia, 2007); J. Leipoldt, *Schenute von Atripe und die Entstehung des national-ägyptischen Christentums* (Leipzig, 1903); R. Krawiec, *Shenoute and the Women of the White Monastery: Egyptian Monasticism in Late Antiquity* (Oxford, 2002); and U. Monneret de Villard, *Les couvents près de Sohag* (Milan, 1925–26).

3 S. Emmel, "Shenoute the Monk: The Early Monastic Career of Shenoute the Archimandrite," in *Il Monachesimo tra eredità e aperture: Atti del simposio "Testi e temi nella tradizione del monachesimo cristiano" per il 50° anniversario dell'Istituto monastico di Sant'Anselmo*, Roma, 28 maggio–1° giugno 2002, ed. M. Bielawski and D. Hombergen, *Studia Anselmiana* 140 (Rome, 2004), 158–59; idem, "From the Other Side of the Nile: Shenoute and Panopolis," in *Perspectives on Panopolis: An Egyptian Town from Alexander the Great to the Arab Conquest*, ed. A. Egberts, B. P. Muhs, and J. van der Vliet (Leiden, 2002), 95–113; B. Layton, "Rules, Patterns, and the Exercise of Power in Shenoute's Monastery: The Problem of World Replacement and Identity Maintenance," *JECrSt* 15, no. 1 (2007): 45–73; idem, "Social Structure and Food Consumption in an Early Christian Monastery: The Evidence of Shenoute's *Canons* and the White Monastery Federation A.D. 385–465," *Le Muséon* 115, nos. 1–2 (2002): 25–55.

4 Stephen Emmel was the first to establish a structure for Shenoute's writings. See *Shenoute's Literary Corpus* (Leuven, 2004). Critical editions of Shenoute's *Canons* books 1–9 and *Discourses* books 1–8 are currently in preparation under the direction of Stephen Emmel and will appear in CSCO (Leuven). Selected additional studies of Shenoute include H. Behlmer, *Schenute von Atripe, De iudicio* (Torino, Museo Egizio, Cat. 63000, Cod. IV) (Turin, 1996); D. Brakke, "Shenoute, Weber, and the Monastic Prophet: Ancient and Modern Articulations of Ascetic Authority," in *Foundations of Power and Conflicts of Authority in Late-Antique Monasticism: Proceedings of the International Seminar, Turin, December 2–4, 2004*, ed. A. Camplani and G. Filoramo (Leuven, 2007), 47–74; J. Timbie,

"The State of Research on the Career of Shenoute of Atripe in 2004," *Coptica* 4 (2005): 52–74; and D. W. Young, *Coptic Manuscripts from the White Monastery: Works of Shenute* (Vienna, 1993).

5 The latest dated piece of evidence at present is a painting of the Mother of God and the Christ child, in the monumental church triconch, to the south of the eastern lobe. William Lyster has assigned it to the early fourteenth century. It is as yet unpublished. Previous publications on the White Monastery include the following: E. Bolman, S. Davis, and G. Pyke, with contributions by M. Abdel Rahim, L. Blanke, D. Brooks Hedstrom, W. Dolling, M. al-Anthony, D. McCormack, M. Khalifa, S. Mohammed, P. Sheehan, A. Stevens, and N. Warner, "Shenoute and a Newly Discovered Tomb Chapel at the White Monastery," *JECrSt* 18, no. 3 (2010): 453–62; E. Bolman, S. Davis, L. De Cesaris, M. El-Anthony, G. Pyke, E. Ricchi, A. Sucato, and N. Warner, with contributions by M. Abdel Rahim, L. Blanke, W. Dolling, M. Khalifa, S. Mohammed, and A. Stevens, "The Tomb of St. Shenoute? More Results from the White Monastery (Dayr Anba Shenouda), Sohag," *Bulletin of the American Research Center in Egypt* 198 (2011): 31–38; E. Bolman, L. De Cesaris, G. Pyke, E. Ricchi, and A. Sucato, with contributions by M. Abdel Rahim, L. Blanke, S. Davis, W. Dolling, M. El-Anthony, M. Khalifa, S. Mohammed, P. Sheehan, A. Stevens and N. Warner, "A Late Antique Funerary Chapel at the White Monastery (Dayr Anba Shenouda), Sohag," *Bulletin of the American Research Center in Egypt* 195 (2009): 12–18; E. Bolman, L. Blanke, D. Brooks Hedstrom, M. Khalifa, C. Meurice, S. Mohammed, G. Pyke, and P. Sheehan, "Late Antique and Medieval Painted Decoration at the White Monastery (Dayr al-Abiad), Sohag," *Bulletin of the American Research Center in Egypt* 192 (2007): 5–11. For the archaeological and architectural survey work see P. Grossmann, D. Brooks Hedstrom, and M. Abdal-Rassul with an appendix by E. Bolman, "The Excavation in the Monastery of Apa Shenute (Dayr Anba Shinuda) at Suhag: Appendix on Documentary Photography at the Monasteries of Anba Shinuda and Anba Bishoi, Suhag," *DOP* 58 (2004): 371–82; D. Brooks Hedstrom, "An Archaeological Mission for the White Monastery," *Coptica* 4 (2005): 1–26; P. Grossmann, D. Brooks Hedstrom, and S. M. M. Osman with a contribution by H.-C. Noeske in collaboration with M. A. Abd al-Rahim, T. S. Abd al-Fatah, and M. Abd al-Mugdi, "Second Report on the Excavation of the Monastery of Apa Shenute (Dayr Anba Shinuda) at Suhag," *DOP* 63 (2009): 167–220; C. Meurice, "L'intervention du Comité de conservation des monuments de l'art arabe au Couvent Blanc de Sohag," in *Études coptes XI: Treizième journée d'études, Marseille, 7–9 juin 2007*, ed. A. Boud'hors and C. Louis (Paris, 2010), 277–88; S. Davis with E. Bolman, D. Brooks Hedstrom, and G. Pyke, "Life and Death in Lower and Upper Egypt: A Report on Recent Monastic Archaeology at Yale," *Journal of the Canadian Society for Coptic Studies* 3–4 (2012): 9–26.

6 P. Grossmann and G. Lease, "Faw Qibli-1989 Excavation Report," *Göttinger Miszellen* 114 (1990): 9–16; G. Lease, "Traces

the White Monastery provides a much-needed addition to the material record of monasticism in Upper Egypt, and indicates some aspects of the layout and structure of early communal monasteries.⁷ The abandonment of the White Monastery is not well attested, but by the late medieval period it was known only for its famous monumental church. Coptic monks reestablished a living monastery in and around the historic remains in 1975.⁸

The first two seasons of work in 2005 and 2006 by the White Monastery Federation Project included three main goals: excavation; geophysical studies of the site, including ground penetrating radar, resistivity, and magnetometric surveys; and mapping all major features of the site. Twelve excavation trenches in three areas of the White Monastery provided stratigraphic evidence for already exposed architectural features dating as early as the fifth century and as late as the ninth and tenth century. Although the excavations proved valuable for gaining a sense of the depositional history at the site, our work demonstrated that much of the area has been greatly affected by efforts to level it for modern use. Therefore, for our third campaign in 2007 we elected to focus more on the careful documentation of already exposed structures, to create a record of the monastic remains as they exist in the early twenty-first century.⁹ All work was carried out in full collaboration with the Supreme Council of Antiquities (SCA).

We concentrated our efforts on mapping the area that was at the heart of the White Monastery Federation. As a salvage archaeology site, with endangered monuments, the White Monastery presents unique challenges for mapping strategies in what might initially seem to be a fairly straightforward survey project.

of Early Egyptian Monasticism: The Faw Qibli Excavations," *Occasional Papers* 22 (Claremont, 1991); F. Debono, "La basilique et le monastère de St. Pacôme," *BIFAO* 70 (1971): 191–220.

7 J. Goehring, "Remembering Abraham of Farshut: History, Hagiography, and the Fate of the Pachomian Tradition," *JEChrSt* 14, no. 1 (2006): 5; C. Schroeder, "'A Suitable Abode for Christ': The Church Building as Symbol of Ascetic Renunciation in Early Monasticism," *ChHist* 73 (2004): 472–521; J. van der Vliet, "Parerga: Notes on Christian Inscriptions from Egypt and Nubia," *ZPapEpig* 164 (2008): 153–55.

8 O. Meinardus, *Coptic Saints and Pilgrimages* (Cairo, 2002), 81. Thanks to Stephen Davis for this reference.

9 For a preliminary discussion of the work in the 2005 and 2006 campaigns see S. Davis et al., "Archaeology at the White Monastery, 2005–2010," *Coptica* 9 (2010): 25–58.

As an active Coptic monastery, the archaeological site is surrounded by many structures and spaces, including cemeteries, residential quarters, and communal areas for pilgrims. Recognizing the importance of recording the extant remains before modifications further affect the archaeological record, we sought to identify all features that may be linked to the monastery, whether dating to the lifetime of its most famous and best-attested leader, Shenoute, or to those of his successors. We did not allow the early textual record to be the sole guide to our analysis and identification of the physical remains, but rather we considered the archaeological data within the entire history of the enormous complex. Written sources have enhanced, but not dictated, our conclusions.

Objectives

In our three seasons of work we achieved seven objectives, carried out by a number of small teams. These were: (1) survey and mapping of exposed archaeological remains from prior SCA excavations (1980s–1990s); (2) a study of pottery excavated by the White Monastery Federation Project in 2006; (3) a study of painted plaster remains collected from the late antique tomb chapel by the SCA in 2003; (4) the creation of a catalogue of pharaonic blocks reused in the White Monastery church;¹⁰ (5) a structural examination and assessment of the White Monastery church; (6) mapping of the interior of the White Monastery church; and (7) a two-day survey of the base of the cliffs behind the White and Red Monasteries for signs of pharaonic activity.¹¹ The overarching goal of the work is to establish a settlement history of the White Monastery, including its foundation, its history under Shenoute, and its changes over time. Financial support for this work was provided by the National Endowment for the Humanities

10 Objectives four through six took place as part of the Church Documentation Project directed by Bentley Layton and Michael Burgoyne for Yale University. For preliminary reports for the 2006 and 2007 Church Documentation Project see http://www.yale.edu/egyptology/ae_white_church_doc.htm (accessed 8/25/2012). See also D. Klotz, "Triphis in the White Monastery: Reused Temple Blocks from Sohag," *Ancient Society* 40 (2010): 197–213 and D. Klotz, "The Naos of Nectanebo I from the White Monastery Church (Sohag)," *Göttinger Miszellen* 229 (2011): 37–52.

11 Objective seven was directed by John Darnell and with the assistance of Colleen Manassa for Yale University.

(Collaborative Research Grant), the Yale Egyptological Institute in Egypt (Simpson Fund), Dumbarton Oaks (Project Grants in Byzantine Studies), the American Research Center in Egypt (Antiquities Endowment Fund), Temple University, and Wittenberg University.¹²

This report discusses the first objective and includes an account of three seasons of mapping and survey work conducted between 2005 and 2007. Additionally, we present the results from 2005 of the subsurface and geophysical mapping. We focused specifically on creating a comprehensive map of the site, including both ancient and modern features. Our objective is to use this combination of subsurface and surface mapping to gain substantial knowledge about the history of the site. The large-scale mapping work complements the detailed mapping of buildings and features initiated in 2002 and 2003 by Peter Grossmann and Darlene Brooks Hedstrom,¹³ contributing to the architectural history of the White Monastery. Future seasons will be dedicated to specific analysis of the stratigraphic relationships between features as we establish phases of the settlement's history. After three seasons of comprehensive mapping, we have a foundation for studying the daily life and work of the monastic community, with its extensive buildings and features for food preparation, washing, and storage. This discussion will also relate the physical evidence to Shenoute's written references to food production, although it must be said that many of the relevant archaeological features are not conclusively linked to the fifth century.

Surface and Subsurface Survey and Mapping 2005–2007

The archaeological remains of the men's monastery begin immediately outside the entrance to the monumental and still-functioning church and extend to the south, west, and north, covering an area of over six hectares (fig. 1). We divided the entire site into three regions.¹⁴ Area 1 is located to the north and is divided into two subareas, Area 1a and 1b. Area 1a includes the following features: excavation units from 2005 and

2006 (Units A–C and H–L); a building with associated water tanks and a kiln (Unit O); and the Tomb Chapel of Shenoute (Unit N). Area 1b is a narrow stretch of land north of Area 1a and enclosed by a limestone wall. It is intended to be part of a new cemetery for the Coptic monastery. Area 2 extends south and east from the spoil heap and comprises the late antique church of St. Shenoute; excavation units from 2006 and 2007 on the north side of the church (Unit D); and the central quarter (Unit Q) of the monastery with storage facilities, a well, mills, an oil press, a refectory, and possible domestic rooms. Modern structures frame the entirety of the archaeological site: to the northeast is a modern village; to the south is the fence of the modern monastery; to the southwest is a Christian cemetery and facilities for pilgrims; and to the north is a cemetery exclusively for the use of the monks. Area 3 is south of St. Shenoute's church and includes the current entrance to the church; modern restrooms for pilgrims; guard towers; an area adjacent to the church with mills, latrines, and a domed hall (Unit P); a small tree-lined rest area; an unexplored feature in the southeast corner of the site (Units E and F); and a walled section on the southwest corner with substantial fire damage, also showing signs of reuse in the medieval period (Unit M).

In preparation for the first season of excavation work in November 2005, Tomasz Herbich undertook a nonintrusive study of the land surrounded by the enclosure wall of the White Monastery.¹⁵ He conducted four surveys. The first geophysical survey covered Area 1a (2.3 hectares). The section is limited to the west by a Christian cemetery, to the north by a limestone wall, to the east by a wall separating the monastery from the village, and to the south by the large spoil heap from the excavations of the 1980s (fig. 2). The second survey covered Area 1b, a narrow, walled strip of land (0.5 hectares) north of the Christian cemetery and west of Area 1a. This is a plot of land newly dedicated to an exclusively

12 Team members are very grateful to these institutions.

13 See note 5 above.

14 The spoil heap is the result of excavations by the SCA conducted in the 1980s, during which a number of architectural structures were exposed.

15 Working 12–21 November 2005, Tomasz Herbich, from the Institute of Archaeology and Ethnology of the Polish Academy of Sciences, was given logistical support by the Polish Center of Archaeology of Warsaw University in Cairo. Michał Kurzyk, student at the Institute of Archaeology of the Jagiellonian University in Krakow, assisted him. One of the instruments used in the research (FM18) was provided by the Programa de Estudios de Egiptología (Consejo Nacional de Investigaciones Científicas y Técnicas) in Buenos Aires in fulfillment of a cooperation agreement with the Polish Center of Mediterranean Archaeology of Warsaw University.



FIG. 1. Areas 1a (partial), 2, and 3 with central spoil heap, indicated in green, bisecting the site. The White Monastery church is indicated in grey. The current state of the plan is evolving as more changes and updates are made. Mapped features illustrate the state of the site in 2007 (map by Dawn McCormack and Darlene Brooks Hedstrom)

monastic cemetery, and we surveyed it to determine whether there were any ancient features before graves were added. The third survey, Area 2, covered an unexcavated, rectangular section of land (0.2 hectares) on the north side of the White Monastery church, labeled Unit D (fig. 3).¹⁶ In 2005, a village street led directly to this area granting immediate access between the village and the monastery; in 2006, however, the monastery erected a white limestone wall to close off this access and protect the monastery lands. The fourth

survey, located in Area 3, examined the stretch of land (2.0 hectares) most heavily trafficked in the current monastery. It includes the land southeast of the church, touching on the early excavations to the west (Unit P), the domestic buildings to the south, and the metal monastery wall to the southeast and northeast (fig. 4).

The results of the magnetic surveys are presented as gray-tone maps, with black corresponding to extreme positive values of the earth's magnetic field and white to negative ones. High amplitude of values is caused by the presence of red fired bricks, a material characterized by a great magnetic susceptibility, therefore affecting the reading of the subsurface structures. The magnetic measurements from the survey were seriously disturbed by modern buildings; by the presence of iron water

16 Excavations in this location were directed by Sheehan and Blanke. The area yielded substantial deposits of undecorated plaster, presumably from the interior of the White Monastery church. Internal reports by Sheehan and Blanke, 2005 and 2006.

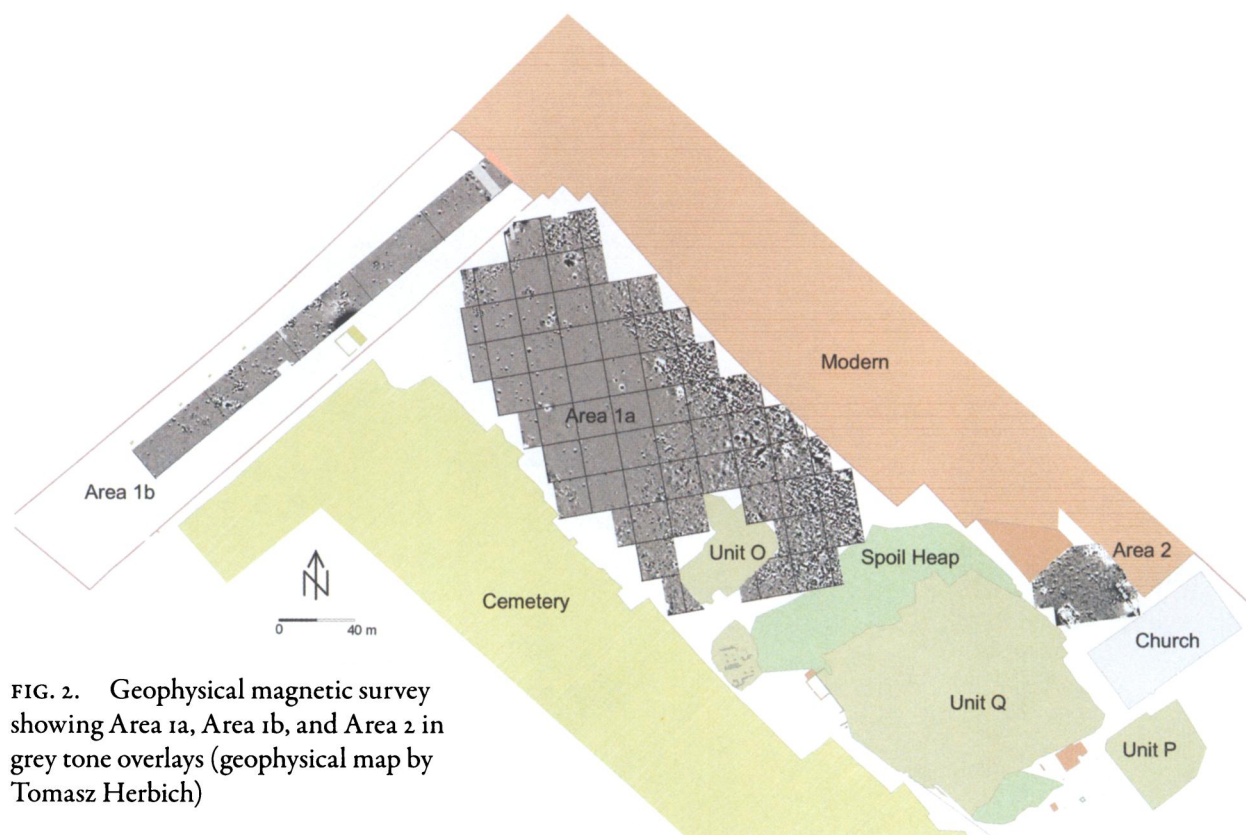


FIG. 2. Geophysical magnetic survey showing Area 1a, Area 1b, and Area 2 in grey tone overlays (geophysical map by Tomasz Herbich)

FIG. 3. View to the west of Area 2, Unit D, taken from the roof of the church in 2005 before the construction of a wall separating the modern village from the monastery (photo by Darlene Brooks Hedstrom)



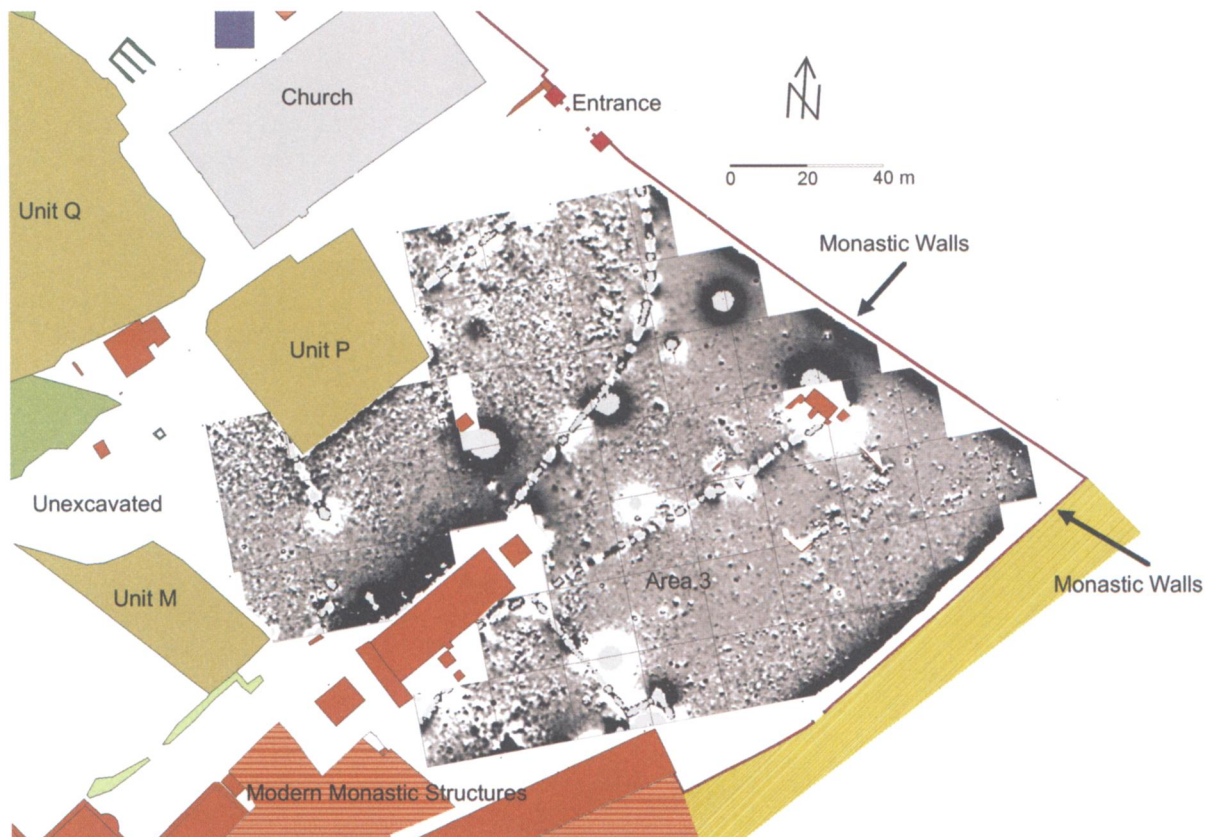


FIG. 4. Geophysical magnetic survey showing Area 3 in the White Monastery (geophysical map by Tomasz Herbich)

pipes, power line poles, and iron gates; and by significant surface waste, such as metal bottle caps and pieces of ancient burned bricks.¹⁷

The decision to use magnetic surveys as the main method for geophysical research at the White Monastery was determined by the geological conditions of the site and the character of anticipated features. The makeup of the Eocene Limestone plateau, on which the monastery was erected (chiefly sand and gravel), is characterized by low magnetic susceptibility;

17 T. Herbich and D. Bénazeth, "Le kôm de Baouît: Étapes d'une cartographie," *BIFAO* 108 (2008): 165–204, 527–28. Herbich and Bénazeth impressively demonstrate the effective use of magnetometric survey at Bawît, which is a relatively isolated monastic site with little modern activity and is not subject to the kinds of interferences from development seen at the White Monastery. Through intensive survey, Herbich's work at Bawît provides a rich subsurface map of the settlement that will aid archaeologists and scholars in the reconstruction of the site.

the same material is composed of layers filling and covering ancient structures.¹⁸ The ancient buildings visible on site are constructed of red brick and mud brick made of Nile silt, materials characterized by a high magnetic susceptibility, at least in comparison to sand and gravel.

Two fluxgate-type gradiometers by Geoscan Research, models FM 18 and 36, at 0.1 nT resolution, were used for the survey. Magnetic prospection covered an area totaling five hectares (50,000 m²). The measurement grid was 10 × 20 meters with points every 0.25 meters along lines twenty meters long and set 0.5 meters apart. The density of this grid, with eight measurements per square meter, guaranteed the recording of even small structures such as walls not more than

18 A. A. Ahmed and A. Fawzi, "Meandering and Bank Erosion of the River Nile and Its Environmental Impact on the Area between Sohag and El-Minia, Egypt," *Arabian Journal of Geosciences* 4, nos. 1–2 (2011): 1–11.

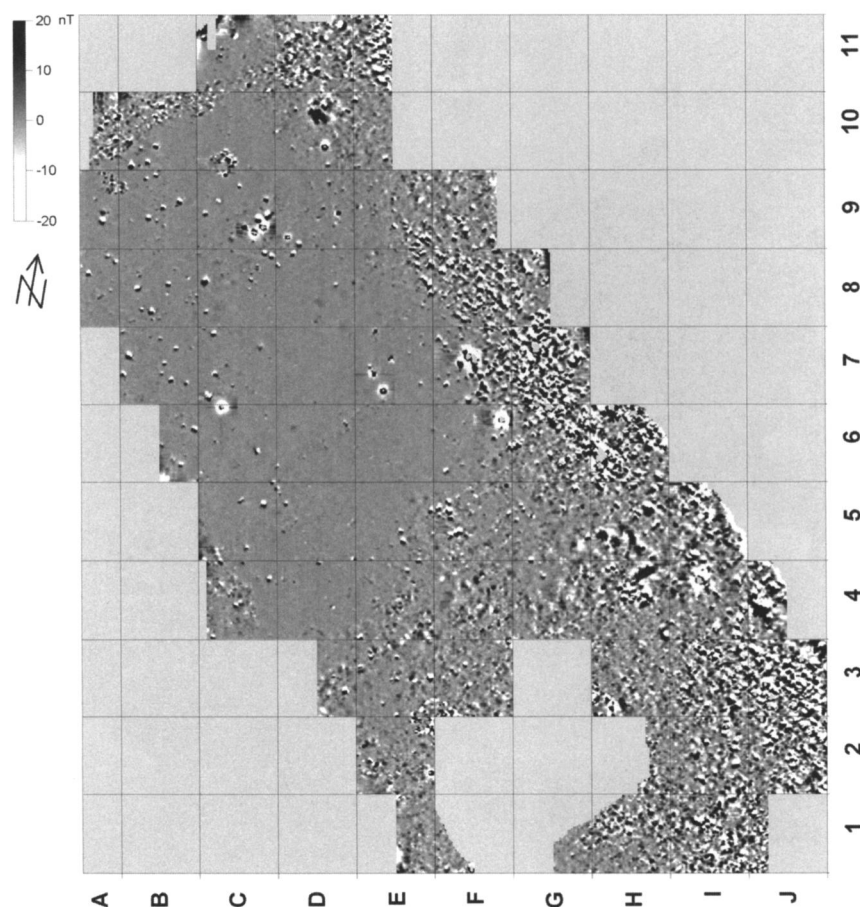


FIG. 5. Magnetic map of Area 1a showing the border between the disturbed and undisturbed zones between squares D3 and F6. Sampling rate 0.25×0.50 m, interpolated to 0.25×0.25 m. Dynamics $-16/+24$ nT (geophysical map by Tomasz Herbich)

twenty centimeters wide.¹⁹ Using a combination of survey processes (point density, parallel mode,²⁰ and sensor adjustments) yielded a geophysical image of very high clarity. The measurement data were processed using Geoplot 3.0 and Surfer 8.0 software (figs. 5–6 and 8–12). Negative values are the effect of measurements being made with a gradiometer; the apparatus is equipped with two probes, one above the other (0.5 m apart in the case of FM equipment), each of which measures the vertical component of the intensity of the earth's magnetic field. Maps of results record only the differences between the readings of the two probes. This procedure limits the measurements to observations of local

changes of the field's intensity, and avoids the disturbing influence of daily fluctuations of field intensity and of changes due to the varied geological ground structure. FM apparatuses by Geoscan Research are capable of tracing changes in ground structure to a depth of 0.5–2.0 meters depending on the magnetic susceptibility of the objects.

The survey results in Areas 1a and 1b clearly divide the area into two zones of undisturbed and disturbed readings (figs. 5 and 6). The former occupies the north-western part of Area 1a and all of Area 1b, where there are very few observable traces of intervention in the ground. The latter are consistent with the southeastern part of Area 1a, which was excavated or disrupted in recent decades. Magnetic intensity values in the disturbed zone (in the range from -5 to 10 nT) are possibly indicative of mud-brick ruins. The absence of any visible regularities in the values likely indicates that the remains are in an extremely dilapidated state. The only linear anomalies (oriented SW–NE) that could be interpreted as walls

19 The measurements were carried out in parallel mode, meaning that the magnetic-intensity recording equipment was moved along the measuring lines in one direction only. Sensors were adjusted at the reference point after completing each grid.

20 The parallel mode of readings requires twice as much time as the commonly used zigzag method, whereby the apparatus is moved back and forth along the lines while taking measurements.

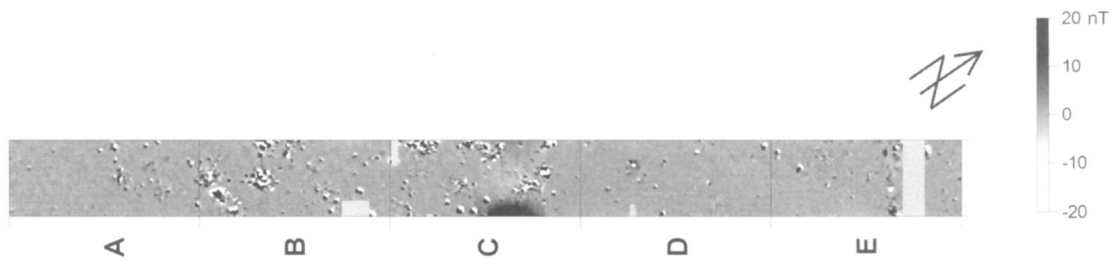


FIG. 6. Magnetic map of Area 1b. Fluxgate gradiometers FM 36. Sampling rate 0.25×0.50 m, interpolated to 0.25×0.25 m. Dynamics $-7.5/+12$ nT (geophysical map by Tomasz Herbich)

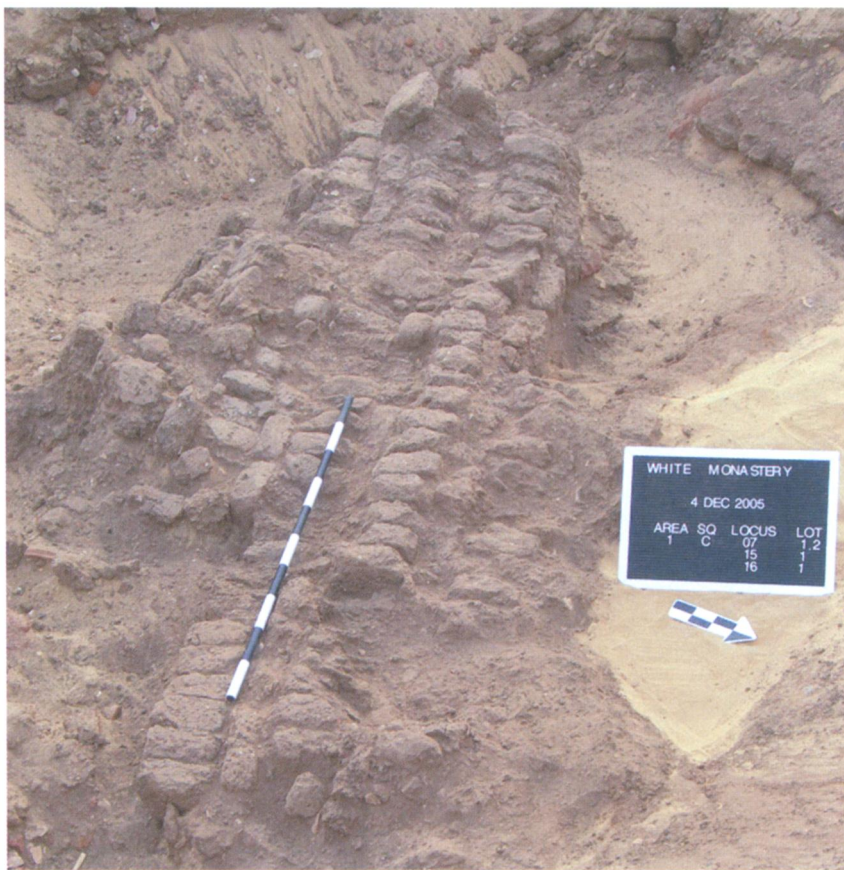
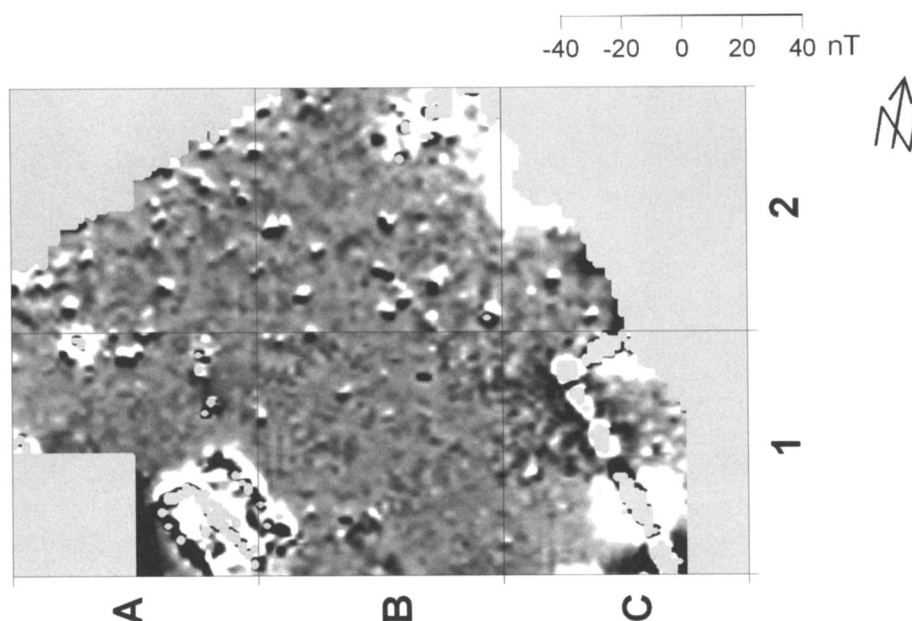


FIG. 7. Excavation in 2005 of Area 1 Unit C, showing poorly preserved mud brick wall discovered when examining magnetic survey results (photo by Darlene Brooks Hedstrom)

of buildings are situated in F₅, E₄, and F₄ (see fig. 5). Excavations began in 2005, after the magnetic survey, and confirmed the presence of mud-brick architecture that was poorly preserved (fig. 7). Another anomaly suggestive of a structure runs along a line between the middle of H₃ and the northwestern corner of G₅. It could represent the edge of buildings of some kind, perhaps at the edge of a walkway or narrow pathway; however,

time constraints precluded any archaeological investigation of the features. Oval anomalies two–three meters long and accompanying elongated anomalies three–five meters long, demonstrating high intensity changes of the magnetic field (ranging $-30/+90$ nT), were observed in H₅ and at the north edge of H₄. They may correspond to the remains of industrial activities such as kilns or ash dumps. Nothing visible on the surface aids in their

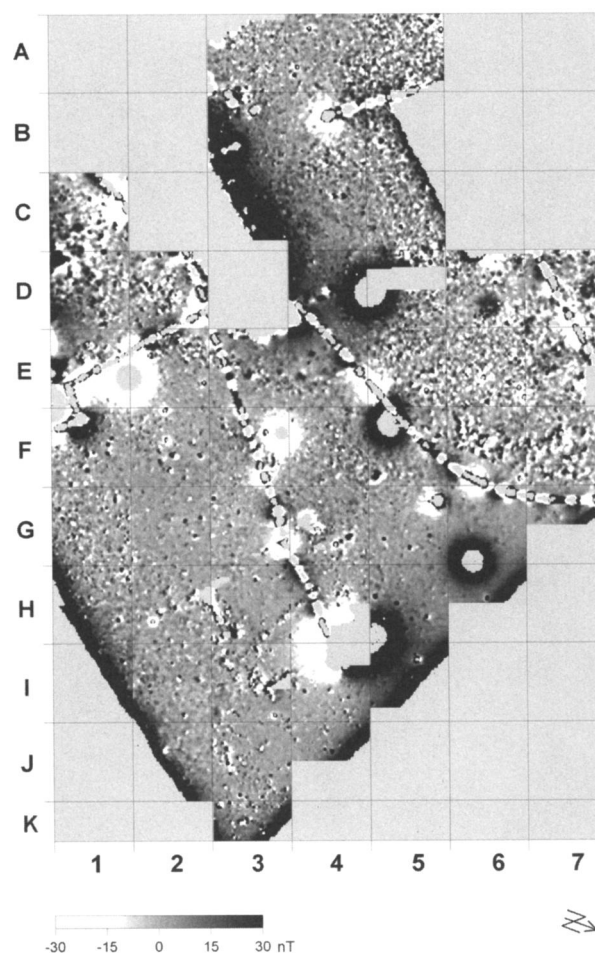
FIG. 8. Area 2. Magnetic map. Fluxgate gradiometers FM 36. Sampling rate 0.25×0.50 m, interpolated to 0.25×0.25 m. Dynamics $-30/+40$ nT (geophysical map by Tomasz Herbich)



interpretation. Excavation is therefore necessary to examine fully the cause of these changes in the magnetic field. The map also shows some areas of anomalous values caused by red brick clusters that are partly visible on the surface, at the junction of E2, E3, and F3 and in H1. Other disturbances point to possible modern features, such as the edge of a playing field, high concentrations of metal waste from the village, and mounds of contemporary construction debris.

In the narrow, twenty-meter-wide sample strip in Area 1b the presence of reinforced concrete in the walls seriously disturbed the readings. Access was further limited by the presence of dumps of modern building materials and recent burials. The magnetic maps show no anomalies that could be even remotely linked with archaeological features. Based on these results, we are confident that the extension of the modern cemetery does not sit on ancient remains. Similarly, the survey results in Area 2 were unreliable, as numerous metal objects visible on the surface greatly disturbed the readings of subsurface structures. Underground metal

FIG. 9. Area 3. Magnetic map. Fluxgate gradiometers FM 36. Sampling rate 0.25×0.50 m, interpolated to 0.25×0.25 m. Dynamics $-13/+30$ nT (geophysical map by Tomasz Herbich)



water pipes also affected the readings of any mud-brick architecture. However, despite these negative elements, the magnetic reading did not show any traces of red brick architectural remains (fig. 8).

The results of the fourth survey, in Area 3, provided a unique opportunity to examine the impact of modern site features on the documentation of ancient remains. In these two hectares the most distinctive anomalies, with high intensity measurements (± 200 nT at a resolution of 0.1 nT), are directly linked to the modern monastery's infrastructure. Various factors contributed to the skewing of the data: the presence of iron posts for the power, iron water pipes, metal bars for the monastery wall, modern buildings, chain-link fencing for protecting excavated remains, and substantial metal surface debris. Despite these disturbances, the magnetic map reveals traces of earlier occupation. Unfortunately, apart from a few exceptions, the measurements allow

for little more than the identification of sectors where architectural remains can be expected and should be examined through excavation. Particular areas for further study include the northwestern part of Area 3 immediately adjacent to Unit P and to the south of the church (fig. 9). The anomalies here are probably due to layers of red brick, the same material that was used in the construction of features revealed in Unit P. The high magnetic susceptibility of red brick makes it almost impossible to trace particular walls by separating them from the mud and red brick debris in the fill. By juxtaposing the magnetic data in Area 3 with Grossmann's mapping of those mud-brick architectural remains that were visible on the surface in the 1980s (and expanded in 1991, 2002, and 2003) it is possible to note a connection between the course taken by mud-brick walls (along an E-W line) and the southern edge of the anomalous zone described above (fig. 10).

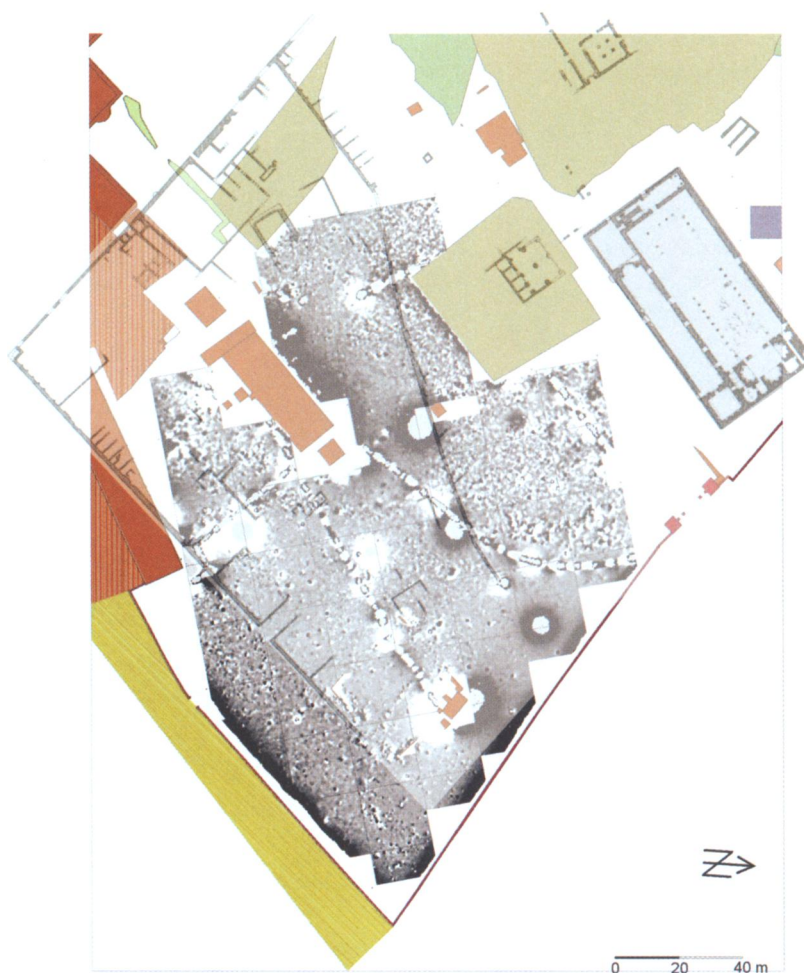


FIG. 10. Area 3 magnetic map with overlay of Grossmann's comprehensive site map, showing alignment of some structures. Plan by P. Grossmann, in Mahmoud Ali Mohamed and Grossmann, "On the Recently Excavated Monastic Buildings in Dayr Anba Shinuda: Archaeological Report," *BSAC* 30 (1991): 53–63 and fig. 1

To explore the usefulness of additional types of subsurface survey, resistivity prospection was also planned, but in a smaller area of the site.²¹ In order to test the method's effectiveness, we covered an area of eight hundred square meters in Area 3, where the high level of metal disturbances had produced poor results. We anticipated that resistivity prospection would prove helpful in tracing structures made of limestone, sandstone, and red brick. Since neither type of stone causes changes in magnetic field intensity, the earlier survey could not detect these two materials. The Egyptian climate results in low ground humidity, which greatly reduces the usefulness of the resistivity method in areas not irrigated. For resistivity to work in such arid conditions the survey requires laborious watering of the survey area to establish good contact between the ground and the device probes.

A Geoscan Research RM15 resistivity meter with Multiplexer MPX15 was used for the resistivity prospection. Readings were made using a twin probe array with traversing probes spaced 0.5 meters apart and stationary probes at intervals of three meters. The sampling grid was two measurements per square meter, taken every 0.5 meters along traverses one meter apart and also squares twenty meters to the side, using a zigzag mode. The results of the resistivity survey are presented as a gray-tone map, black corresponding to the highest values of resistivity (fig. 11A), and a color map, with blue corresponding to low resistivity values and brown to high ones (fig. 11B). The survey area is characterized by very high values of resistivity, which demonstrate that a resistivity survey is a better method for subsurface readings at the White Monastery than magnetometry (fig. 12). The remains of architecture (most probably) can be seen in the southern grid with the slight outline of walls. Once we have completed the comprehensive map we hope to resume the use of resistivity survey to help add material to other sections of the map.

Overall, the magnetic survey results did not produce strong images of walls, and therefore we were unable to reconstruct plans of particular buildings not already visible on the surface, although in some cases

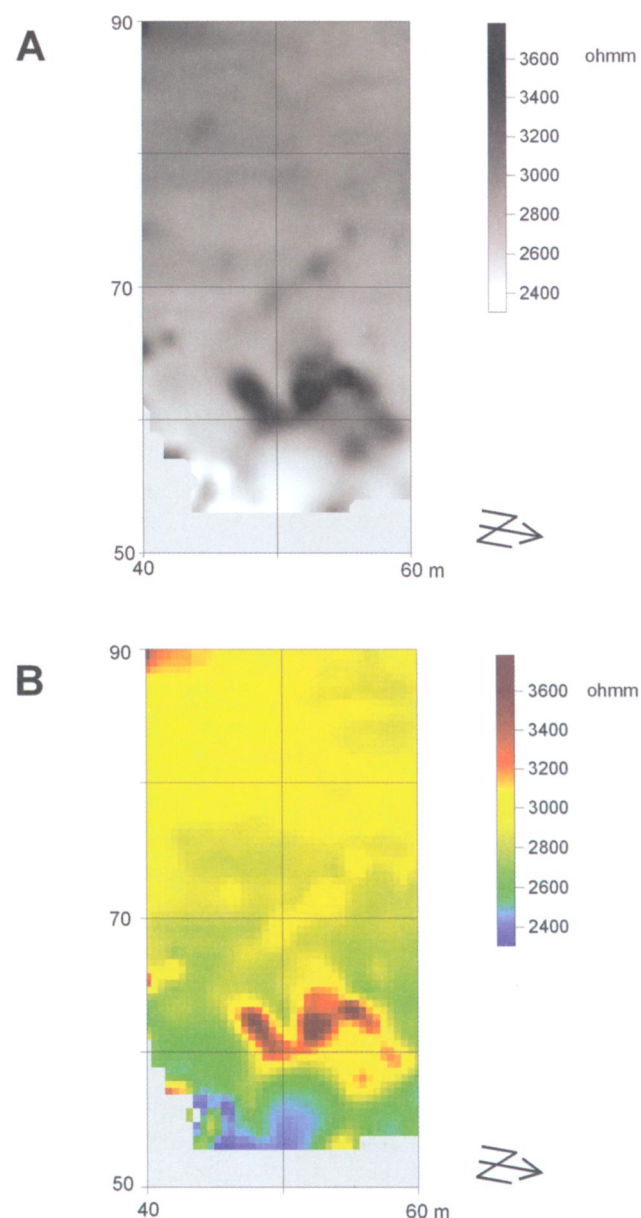


FIG. 11. Area 3 resistivity maps. Resistivity meter RM15. Sampling rate 0.5 × 1 m, interpolated to 0.5 × 0.5 m. A: dynamics 2390–3521 ohmm. B: dynamics 2300–3780 ohmm (geophysical map by Tomasz Herbich)

21 Similar methods of geophysical prospection have been used effectively at Abydos. See M. M. El-Gamili et al., "Goelectric Resistance Scanning on Parts of Abydos Cemetery Region, Sohag Governorate, Upper Egypt," *Archaeological Prospection* 6, no. 4 (1999): 225–39.

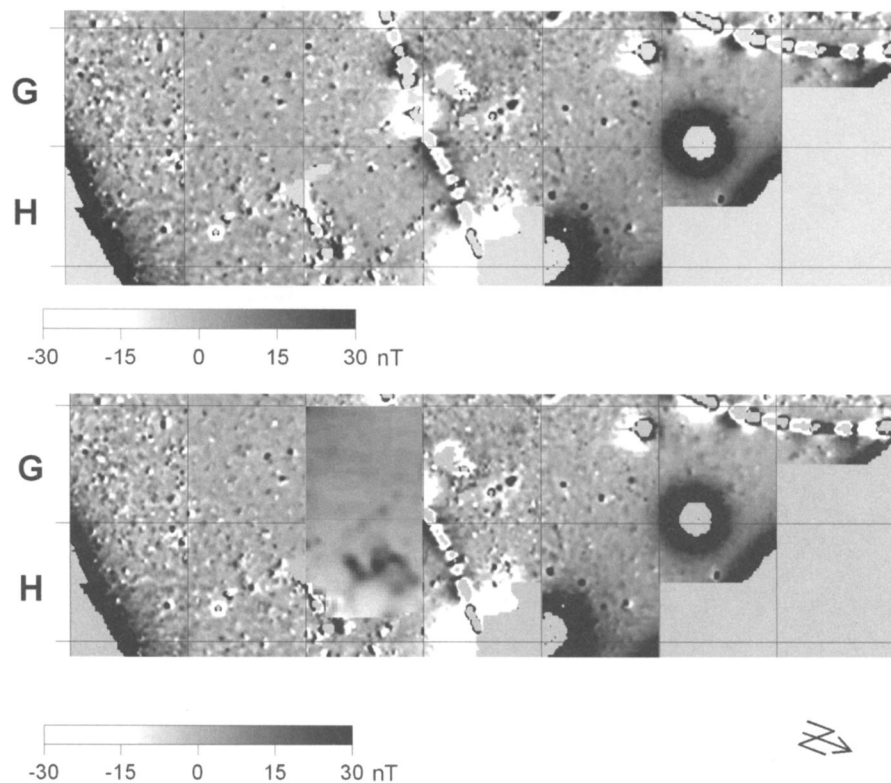


FIG. 12. Comparison of readings from Area 3, sections H₃ and G₃ in magnetic (above) and resistivity (below) surveys, illustrating walls in H₃ discovered in the latter but not the former (geophysical map by Tomasz Herbich)

traces of walls seem to be visible in the subsurface readings. The unsatisfactory results are due to a number of factors, not only the metal objects. For one thing, the mud-brick architecture that was noted must be in a fairly ruinous condition, as readings could not positively record strong wall lines. The fill around several red brick buildings must also contain large amounts of fired-brick debris.²² No actual layouts of architectural features could be traced based on the magnetic prospection results, but the survey has pictured the approximate extent of areas where mud-brick architecture could be expected and those areas where red brick was commonly in use for construction. The small resistivity survey provided better results for recording architectural remains, but the method is very time-consuming. Therefore, test excavation areas are critical to examine the White Monastery's settlement history in these areas.

22 The cleaning of some architectural features on site confirmed this hypothesis. Some walls were hollow with an exterior face the width of one brick and an interior filled with construction debris.

Refectories and Food Preparation Areas at the White Monastery

The center of the White Monastery, identified on our map as Unit Q in Area 2, is located directly west of the church. The SCA excavated it in the 1980s.²³ It is evident from Grossmann's initial description of the architecture that they had uncovered an important part of the monastic settlement. The rich remains exposed in Unit Q, in particular, suggest that the function of various components of the men's monastery related to food preparation and eating (fig. 13). Currently, a comprehensive study of how they were used and of their dating is not possible without further excavation. However, enough material is now visible to make some initial remarks and some suggestions for the future, with the hope that further work at the site will significantly refine this preliminary discussion. A substantive analysis is planned for publication that will report

23 M. A. Mohamed and P. Grossmann, "On the Recently Excavated Monastic Buildings in Dayr Anba Shinuda: Archaeological Report," *BSAC* 30 (1991): 53–63 and figs. 1 and 11.

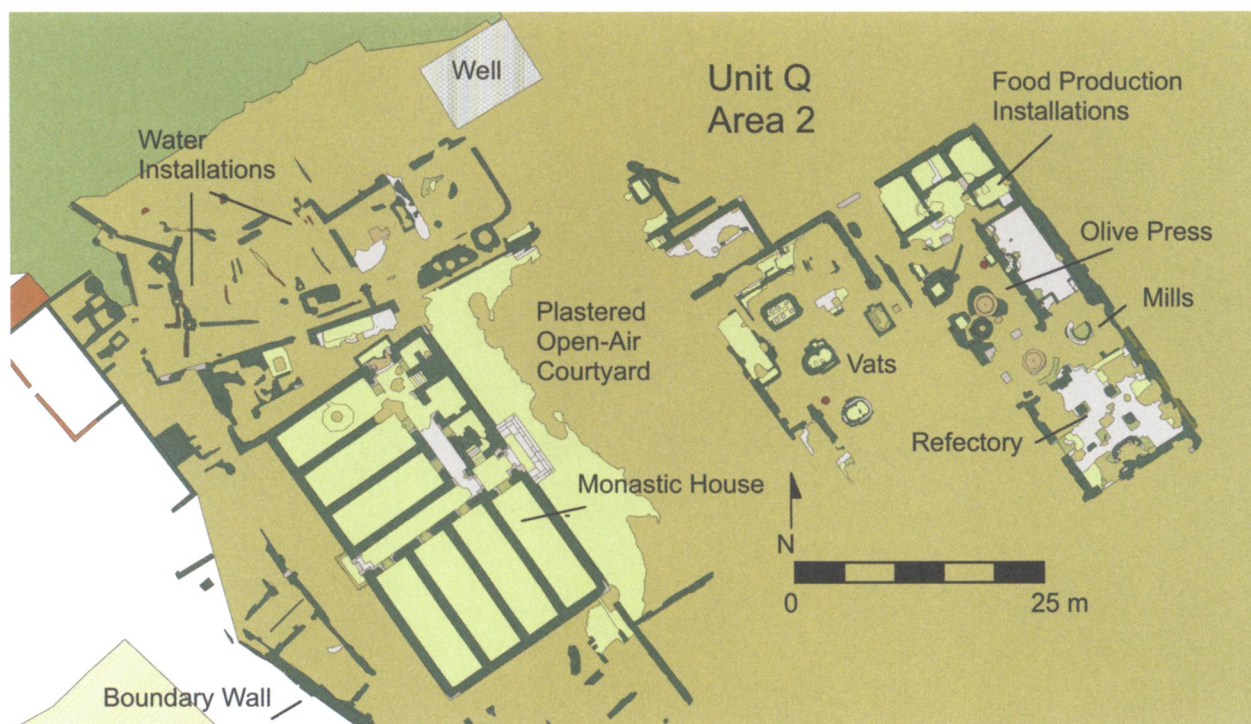


FIG. 13. Map of Unit Q directly west of the church showing the large monastic house, open-air courtyard, and food-production area (map by Dawn McCormack and Darlene Brooks Hedstrom)

on our three seasons of work at the White Monastery (2005–2007).

In 2007, we examined a two-hectare area, Unit Q, and two smaller areas, Unit N (west of the largest spoil heap) and Unit O (northwest of the spoil heap).²⁴ In attempting to identify the various structures in Unit Q, we have built upon Grossmann's foundation for understanding the buildings and their possible relationships to each other. It is worth remembering that the spoil heap, made during the clearing of Unit Q in the 1980s, artificially divides the terrain. Therefore, the view that we have of the site's landscape, with a large mound in the north, is distorted. We know from surface evidence that the remains of the monastery continue underneath this mound, and they are most likely connected to buildings and other facilities, such as plastered tanks and ceramic piping, to the north in Unit O (figs. 14–15). A comparison of the maps and recorded elevations with

and without the spoil heap demonstrates that we must consider the area as a continuous whole; in other words, Unit Q and Unit O are likely part of the same construction phase and share similar modifications.

Our central objective in the third season was to map the previously excavated, and now long-exposed, architecture located in Unit Q. The SCA's exploration of it in the 1980s began after the discovery of a cache of gold coins near the large residence hall in the northwest quadrant.²⁵ The majority of the architectural features in this area can be divided into four categories: water-delivery system, food-production area, domestic residences, and an enclosure wall with adjoining structures. After four weeks of work, we were successful in mapping and photographing seventy-five percent of the major archaeological features still present. Detailed survey work is still needed to add specific features to each of the monumental components of the settlement. The methods for mapping included the cleaning of all surfaces and corners in order to collect accurate points

24 Units M, N and O are not discussed in this report, because they are the subjects of later, targeted seasons of work from 2008 to present. See Bolman et al., "Shenoute and a Newly Discovered Tomb Chapel" (n. 5 above).

25 See Noeske's discussion of the coinage in "Second Report" (n. 5 above), 210–19.

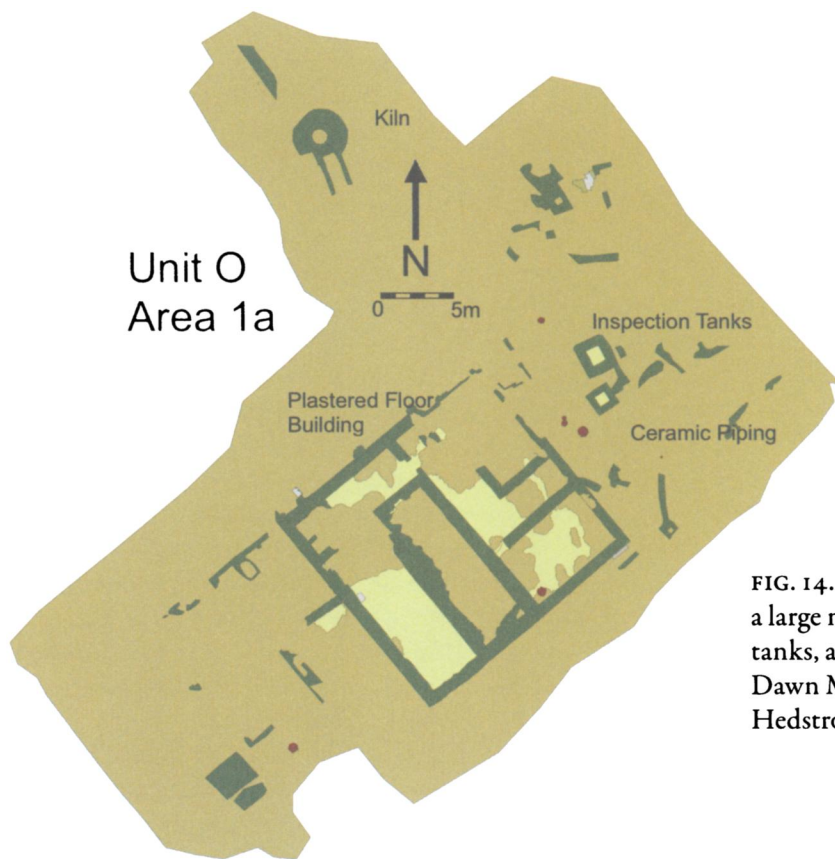


FIG. 14. Map of Unit O illustrating a large multiroom building, plastered tanks, a kiln, and ceramic piping (map by Dawn McCormack and Darlene Brooks Hedstrom)



FIG. 15. Plastered holding tank with ceramic channel and supports on the east side of Unit O. View to the southwest (photo by Darlene Brooks Hedstrom)

for plotting.²⁶ In some areas, minimal excavation was needed to expose features that had been obscured with accumulated debris since the initial work of two and a half decades ago.

Ceramic analysis was not conducted as part of our work in Unit Q, due to the absence of stratigraphic contexts. The SCA collected large samples of ceramic material, but no associative data was available to place this wealth of evidence back into its original context. Our excavations in Units A–C and H–L and the reclearings in Units M and O provide evidence for construction methods that we can use as a tentative basis for comparative phasing. Our current interpretation of those areas is that they were occupied at least during the seventh and eighth centuries, and it seems possible to posit that the similarities in construction suggest a similar date for the material found in Unit Q. However, we need to explore further the questions of when all of these structures were built and how long they were in use. At present, in the absence of substantial stratigraphic analysis and excavation, it is not possible to say what, aside from the church and the well, could date securely to the period of Shenoute's control of the monastery, in the late fourth and fifth century.

The location of structures in Unit Q appears to demonstrate a well-designed site plan, with the buildings extending to the west of the church in such an orderly manner that they could date to the same time as the church or shortly thereafter. For example, the entrance to the buildings and associated food areas (both the refectory and the spaces for food preparation) is oriented along the same axis followed by the south entrance of the church and is adjacent to entrances on the west side of this monument. Signs of repair and minor modifications indicate that these structures continued in use for some time. In contrast to the areas to the north, this was the only area that included Islamic glazed wares, suggesting that it continued to be used after the northern and southern regions of the monastery were abandoned.²⁷ In the discussion that follows we outline areas that will need further comparative analysis with late antique and medieval sites

in Egypt and the Mediterranean region. These brief observations, however, illustrate the importance of the archaeological work carried out in Unit Q to develop a history of material remains at the White Monastery.

We know from Shenoute that he initiated the building of the great limestone church that stands today and of additional projects at the monastery in the middle of the fifth century.²⁸ In his *Canons* and *Discourses*, Shenoute made references to several physical aspects of the community. This preliminary exploration of the potential implications of the textual evidence for understanding the archaeology of the site may assist our interpretation, but cannot, of course, guide it. In his descriptions of challenges in directing a diverse homosocial environment including separate communities for men and women, we can glimpse the built environment.²⁹ Using Shenoute's *Canons* in particular, Bentley Layton has identified the central components of the men's monastery and has described his reconstruction as "a kind of archaeology based on texts alone"; "Shenoute never describes the monastery outright" in his writings, but addresses incidents in which the monastery's layout is mentioned. Layton therefore bases his "reconstruction of the monastery often on circumstantial evidence found in passing remarks in the rules."³⁰ In addition to the monumental church, Layton identified ten areas of the men's monastery that Shenoute described as bearing distinct spatial features. These are: monastic sleeping quarters, a central refectory for healthy monks, a kitchen associated with the communal eating area, an infirmary that houses ill monks and provides them with special diets, a separate infirmary kitchen, a geriatric ward for those monks

26 The team uses a TopCon total station and Pythagoras GIS mapping software for the creation of the overall site map of all ancient and modern architecture.

27 See Brooks Hedstrom's discussion of the ceramics in "Second Report," 205–9.

28 S. Emmel, "The Historical Circumstances of Shenoute's *God is Blessed*," in *Themelia*, ed. M. Krause and S. Schaten (Wiesbaden, 1998), 81–96; P. Grossmann, "Zur Stiftung und Bauzeit der großen Kirche des Shenuteklosters," *BZ* 101, no. 1 (2009): 35–54; idem, "Die klassischen Wurzeln in Architektur und Dekorsystem der großen Kirche des Shenuteklosters bei Suhag," in *Perspectives on Panopolis* (n. 3 above), 115–31.

29 C. T. Schroeder, "Queer Eye for the Ascetic Guy? Homoeroticism, Children, and the Making of Monks in Late Antique Egypt," *Journal of the American Academy of Religion* 77, no. 2 (2009): 333–47; eadem, "Prophecy and Porneia in Shenoute's Letters: The Rhetoric of Sexuality in a Late Antique Egyptian Monastery," *JNES* 65 (2006): 81–97; D. Krueger, "Between Monks: Tales of Monastic Companionship in Early Byzantium," *Journal of the History of Sexuality* 20, no. 1 (2011): 28–61.

30 Layton, "Rules" (n. 3 above), 47.

who are bedridden, an important storage center for the monastery called a diakonia, a place for the storage of records, a commercial scriptorium or library, and a gatehouse.³¹ Shenoute mentioned daily activities and, by extension, areas in which they were carried out, in conjunction with specific titles and individuals. A range of agricultural plots included “fields, vegetable gardens, palm groves and fruit orchards, with their associated farm animals, equipment and irrigation systems.”³² Their proximity to specific buildings is difficult, if not impossible, to ascertain. In another passage, Shenoute prohibited all monastics, both male and female, from gazing with desire at the exposed parts of each other’s bodies in their communities.

Here, as in the other examples, Shenoute is concerned with describing not so much places as behavior in relationship to space. Despite this, his admonitions build a textual image of the complex environments where interactions might take place. He wrote, “Accursed are men or women who will peer or look with lust upon the nakedness of their neighbors in their bedrooms, or stare at them in any other place, either when they are on a wall or up a tree, or when they urinate or walk in mud or bathe, or while they are sitting down and uncover (themselves) inadvertently, or when they are dragging a log up to a high spot, or when they are working with one another or washing their clothes in the flow at the canal or by the cistern, or when the brethren who make the bread reach into the ovens. . . .”³³ The descriptions in this passage of specific spaces within the monastic grounds are vague at best, but they do cast the monastery as having several areas of activity in which individuals interacted outside of the more expected sites of the refectory, church, and monastic cells. These descriptions help activate the spaces under consideration for us, as we begin to consider the life of the monastery.

Additional insight into other areas of the monastery comes from Besa, Shenoute’s successor, who ruled the federation from 465 to 474. In a fragment of a letter in which Besa reprimanded disorderly speech in the men’s community, he described places where the problematic activities happened, such as in “the corners of

the monasteries, and in the streets, and in the houses, and on the roofs, and at their own places.”³⁴ In a second fragment, we learn of the diversity of specialized laborers who are monks and residents of the federation’s community. Besa, in rebuking monastic craftsmen for inappropriate distribution of their goods, describes skilled artisans, including carpenters, smiths, potters, sack weavers, linen weavers, basket makers, tailors, scribes, and bookbinders.³⁵ These specialized activities would likely have required dedicated work areas, yet such spaces are not so far visible at the site. The writings of Shenoute and Besa therefore attest to a complex monastic settlement. The difficulty lies in determining whether the extant features at the White Monastery are buildings from Shenoute’s tenure, and what was their diachronic use.

Within his works, Shenoute also extensively addressed concerns about food, including the regulation of its distribution within the community, and the buildings in which it was handed out, as Layton has demonstrated.³⁶ The following features appear in the written sources, and might be found within an archaeological context at the White Monastery. Remains of produce gardens and bones of fish and ovicaprines, as have been discovered at Abu Mina and Kom el-Nana (Tell el-Amarna), are likely to have existed.³⁷ Bread was baked centrally for all three communities belonging to

31 Ibid., 47–50.

32 Ibid., 50.

33 D. Young, “Five Leaves from a Copy of Shenoute’s *Third Canon*,” *Le Muséon* 113, nos. 3–4 (2000): 272–73.

34 Besa, fr. 27, “To the Brethren on Maintaining Unity,” ed. and trans. K. H. Kuhn, *Letters and Sermons of Besa*, CSCO 157–58, S. Coptici 21–22 (Louvain, 1956), 22:77.

35 Besa, fr. 12, “Reproofs and Monastic Rules,” ed. and trans. Kuhn, *Letters and Sermons*, 22:33.

36 Layton, “Social Structure” (n. 3 above), 25–55.

37 Significant archaeological evidence has been gleaned from the archaeobotanical data found in garden areas of sites at Petra, Abu Mina, and Kom el-Nana. A. R. Littlewood, “Gardens of Byzantium,” *Journal of Garden History* 12, no. 2 (1992): 126–53; R. M. Luff, “Monastic Diet in Late Antique Egypt: Zooarchaeological Finds from Kom el-Nana and Tell el-Amarna, Middle Egypt,” *Environmental Archaeology: The Journal of Human Palaeoecology* 12, no. 2 (2007): 161–74; S. Clackson, “Fish and Chits: The *Synodontis schall*,” *Zeitschrift für ägyptische Sprache und Altertumskunde* 129, no. 1 (2002): 6–11; W. Van Neer and D. Depraetere, “Pickled Fish from the Egyptian Nile: Osteological Evidence from a Byzantine (Coptic) Context at Shanhûr,” *Revue de Paléobiologie* 10 (2005): 159–70; W. Van Neer, W. Wouters, M.-H. Rutschowskaya, et al., “Salted Fish Products from the Coptic Monastery at Bawit, Egypt: Evidence from the Bones and Texts,” in *The Role of Fish in Ancient Times*, ed. H. Hüster Plogmann (Rahden, 2007), 147–59.

the federation, and hardened bread was soaked in bins.³⁸ Evidence for the production of vinegar, olive oil (for consumption and lamps), salted foods, and wine (for the Eucharist only) may remain.³⁹ One or more water-wheels for cleaning hands after eating are mentioned in the textual record.⁴⁰ Shenoute made reference to a standard “monastic portion” that may be indicated as well in the large number of similarly sized coarseware bowls found at the site.⁴¹ In addition to at least one storage facility (diakonia), from which food was carefully dispersed, spaces associated with the distribution and consumption of food to different components of the community are also referred to in the monastic regulations. These include separate kitchens for healthy and sick members of the community, with the latter producing a more varied diet, along with individual refectories for each of these two constituencies, and a gatehouse complex where guests ate and were housed.⁴²

With this list it is possible to see that in the late fourth and fifth centuries the White Monastery was a well-planned institution, with physical divisions between places where food was produced, managed, and consumed. Layton reminds us that these issues were of central concern to Shenoute, who sought to avoid tensions that might arise from the different allowances granted to visitors, and to ill and healthy monastics. However, inconsistencies may exist between the textual evidence examined by Layton and what we may discover about the actual consumption of food, if it follows the pattern revealed by Wendy Smith’s archaeobotanical study of the food remains at the fifth- to seventh-century monastery at Kom el-Nana in Upper Egypt.⁴³ Using excavated samples from that

monastery, and considering them against the literary accounts of the late antique monastic diet, Smith has demonstrated that the food goods in use were far more varied than the textual evidence suggests. In fact, the material traces in the archaeology indicate that the diet was well varied and nutritious. When we consider the three main populations that the White Monastery fed—healthy monks, ill monks, and the laity who visited the community—as well as the range of the food offered or allowed them, it will not be surprising if the archaeobotanical evidence yields a similar variety. The Kom el-Nana analysis provides substantive evidence for a monastic community that provided a diverse diet.⁴⁴ The questions of who exactly was eating these food items and how one would identify this in the archaeological record are still open.

The primacy of food in the life of the monastery finds a physical expression in the placement of the communal spaces, refectories, storage facilities, and food preparation areas so close to the church. Unfortunately, the whole plan and perimeter of the monastery no longer survive. Therefore, our current understanding of the location of Unit Q and the church in relationship to the possible gatehouse, for example, which appears to have left no archaeological remains, is conjectural. The western wall of the monastery, as well as perhaps its northern extent, has been exposed through excavation, but at this point, there is no feature along this wall that is suggestive of a gatehouse as mentioned in Shenoute’s *Canons* and in the twelfth-century text *The*

38 Layton, “Social Structure” (n. 3 above), 33, Can. 7 DG421–27=L.III:69–74.

39 Wine may also have been purchased outside of the federation. Ibid., 45, Disc. 9 HD172 = L.IV:23.

40 Ibid., 36, no. 53, Can. 9DF47 = BM no. 200.

41 Ibid., 37, no. 58, Can. 5 XS325 = L.IV:55. Some of these coarseware bowls are evident on the spoil heaps and sherd scatter across the site, as seen in personal observations by Brooks Hedstrom.

42 Ibid., 45–46. A. T. Crislip, *From Monastery to Hospital: Christian Monasticism and the Transformation of Health Care in Late Antiquity* (Ann Arbor, 2005), 16–17, 28–30, 62–63, and 74–76.

43 W. Smith, *Archaeobotanical Investigations of Agriculture at Late Antique Kom El-Nana (Tell el-Amarna)* (London, 2003). A preliminary discussion is also M. Harlow and W. Smith, “Between Fasting and Feasting: The Literary and Archaeobotanical Evidence

for Monastic Diet in Late Antique Egypt,” *Antiquity* 75 (2001): 758–68. C. Dauphin, “The Diet of the Desert Fathers in Late Antique Egypt,” *Bulletin of the Anglo-Israel Archaeological Society* 19–20 (2001–2): 39–63.

44 Similar studies of the archaeobotanical evidence for a monastic community are under way in Wādī al-Naṭrūn at the late antique and early medieval site of Scetis, at the area known as the Monastery of John the Little. The material recovered thus far is comparable in date to the later seventh-to-tenth-century span of the White Monastery: D. Brooks Hedstrom, S. Davis, T. Herbich, S. Ikram, D. McCormack, M.-D. Nenna, and G. Pyke, “New Archaeology at Ancient Scetis: Surveys and Initial Excavations at the Monastery of St. John the Little in Wādī al-Naṭrūn: Yale Monastic Archaeology Project,” *DOP* 64 (2010): 217–28; D. Brooks Hedstrom, “The Monastic Dwellings at John the Little’s Monastery in Wadi Natrun,” in *Ermitages d’Égypte au premier millénaire: Colloque international, Institut français d’archéologie orientale du Caire (24–26 janvier 2009)*, ed. V. Ghica, Bibliothèque d’études (Cairo, forthcoming).

Churches and Monasteries of Egypt.⁴⁵ In the absence of the eastern and southern walls, it is difficult to reconstruct, additionally, how Unit P, directly south of the church, fits into the overall site plan of the monastery. It is hoped that with further documentation and mapping, additional insight into the larger placement of structures in the White Monastery will emerge.

Despite the limitations in our knowledge of the complete site plan for the monastery, the work in Unit Q presents avenues for more reflection on the layout of buildings, their function, and their relationships to each other. A large doorway immediately opposite the west entrance of the church, now blocked, provided direct access into a pillared hall with limestone paving stones, which belonged to the first phase of this building (fig. 16). Evidence of the pivot for the large entrance door is still visible on the interior threshold (fig. 17). The walls of the structure were built with sun-dried mud bricks and covered with white limestone plaster. Only fragments of these walls remain, although the foundations are still traceable. The exterior walls may have been dressed with smaller limestone blocks, but the evidence is not present in all areas, perhaps because the smaller stones could have been easily removed for later use elsewhere on the site. Close examination of the pillar bases reveals that they were a later addition to the structure since they sit directly on the limestone pavement, illustrating a second phase of building.⁴⁶ All the pillars are T-shaped and probably supported a central dome. At a third phase these pillars were altered with the addition of sun-dried bricks. Further cleaning of this area in 2003 presented new evidence that the limestone paving stones extend further to the south and that the pillared hall is just one section of a much bigger building that may have had a small ambulatory or colonnade on its perimeter. The building gave access at the west to the main north-south street that separates

this hall from the food production area with the large open courtyard, mentioned above.

To access the central precinct of the monastery from the pillared hall, one could cross the central street to the west and enter through a doorway leading to a paved hallway with a set of rooms extending on the south side. Ceramic vessels, approximately 70 to 95 centimeters high, pierce the north and south walls. Embedded into the construction of the walls, the vessels are also covered with several plaster layers. From the central hall, one could also access a small four-pillared building, which we believe to have been a refectory, to the north (fig. 18). This building grants access via the north to two unroofed areas, one of which contains a pair of large rotary mills, made of granite (dia. 1.3–1.6 exterior meters).

The south mill is in the west end of the first unroofed area and has enough surrounding space for it to have been used for flour production (fig. 19). Another mill, located in an apparently separate room directly north and associated with the “L-shaped building,” as described by Grossmann, is adjacent to a vat made of mud bricks and plaster (figs. 20–21). The north mill and its associated vat may be part of an oil press facility. Olive oil production requires two areas: one for crushing and one for pressing.⁴⁷ The mill includes a Roman *trapetum*, or massive stone basin, that would have held rotating convex crushers attached to a wooden framing device, which individuals could push, thereby crushing the olives. The proximity of the mill to the vat suggests that this container may have been a collection area for olive oil. Although it was previously thought that both large stone mills were used for flour, there is not enough space around the north mill for this purpose. The smaller, circular vat, adjacent to the north mill, has channels for the oil to move out of the container to a collection area to the west.⁴⁸ The south mill, which

45 The western and southern edges of the enclosure wall were observed and mapped in the early twentieth century by William Flinders Petrie's assistant. The wall was still visible when Grossmann first visited the site in the 1960s and when he later mapped this area in the 1980s. Today, the southern leg of the wall has disappeared under modifications to the monastery. The northern segment of the wall was found in a very poor state of condition in the 2005 excavation season. Like the western wall, it exhibits signs of heavy fire damage and subsequent repairs. Evetts, *Churches and Monasteries of Egypt* (n. 1 above), 235–40.

46 See Grossmann et al., “Second Report” (n. 5 above), 177–78.

47 R. Frankel, “Western Galilee, Oil Press,” *Excavations and Surveys of Israel* 4 (1985): 110–14; R. Frankel, S. Avitsur, and E. Ayalon, *History and Technology of Olive Oil in the Holy Land* (Arlington, VA, 1994).

48 M. Decker, “Agriculture and Agricultural Technology,” in *The Oxford Handbook of Byzantine Studies*, ed. E. Jeffreys, J. F. Haldon, and R. Cormack (Oxford, 2008), 401–3; K. Ahmet, “A Middle Byzantine Olive Press Room at Aphrodisias,” *Anatolian Studies* 51 (2001): 159–67; W. R. Patton and J. L. Myres, “On Some Carian and Hellenic Oil Presses,” *JHS* 18 (1898): 209–17; U. Leibner, *Settlement and History in Hellenistic, Roman, and Byzantine Galilee: An*

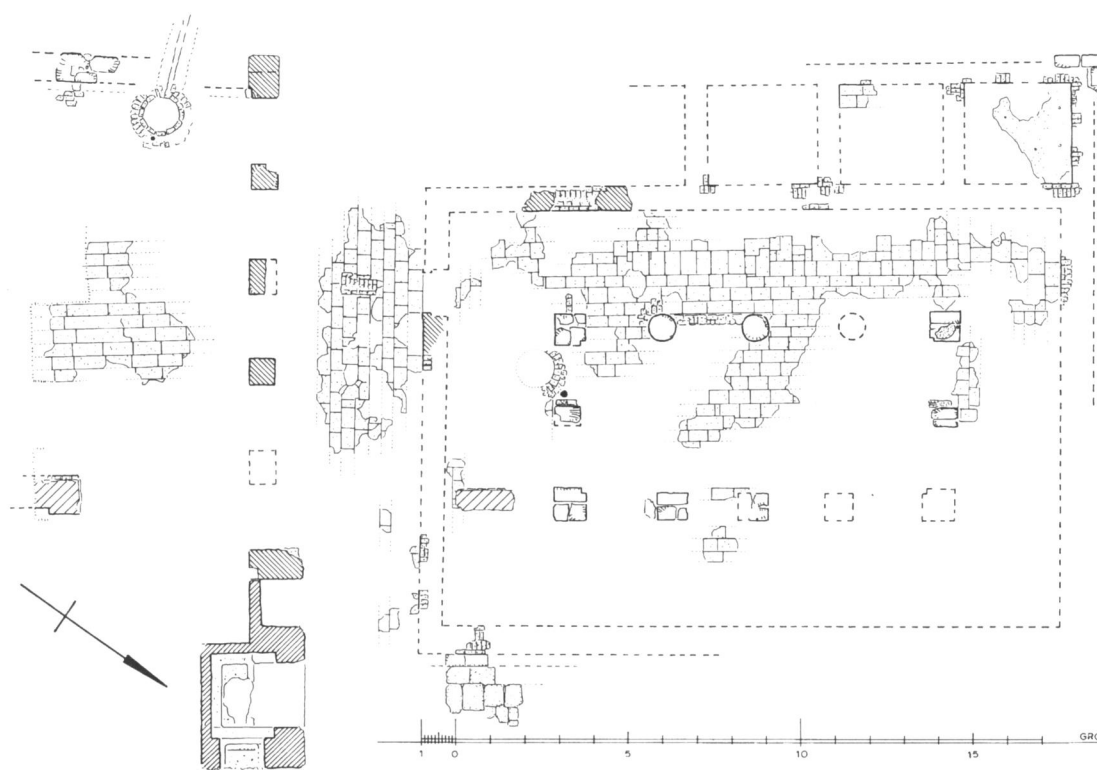


FIG. 16.
Unit Q, large columned hall,
possibly a refectory. The main
doorway is at the southeast corner
(plan by P. Grossmann, in *DOP*
63 [2009]: 176, fig. 8).



FIG. 17. Unit Q, door pivot in southeast
corner and entrance to buildings on
the west side of the White Monastery
church. View to the west (photo by
Darlene Brooks Hedstrom).

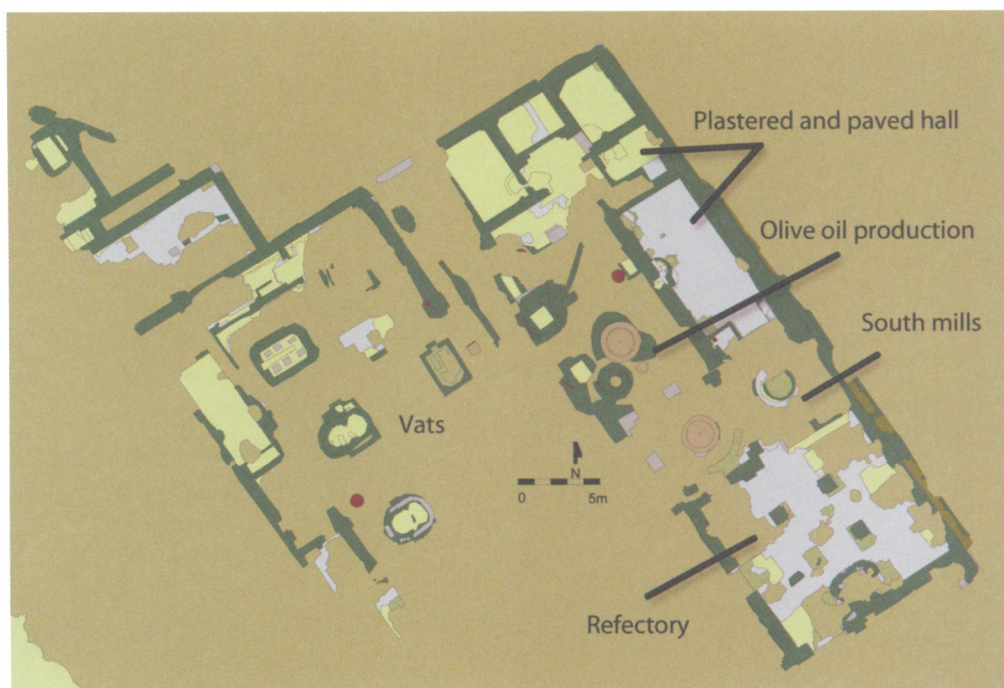


FIG. 18. Food preparation area in Unit Q showing plastered refectory hall, installations for mills, olive oil production area, limestone paved facility, and vats (map by Dawn McCormick and Darlene Brooks Hedstrom).

includes ample space around it, is a better candidate for milling flour with a rotary hand quern.⁴⁹

Ancient authors, particularly Cato and Columella, described olive presses.⁵⁰ The *Revenue Laws of Ptolemy II Philadelphus* (*P. Rev.*) includes several discussions of the use and production of oil in Egypt for the Ptolemaic period. Castor oil is mentioned by Herodotus (*Hist.* 2.94), Dioskorides (I.32), and Pliny (*Nat.* 15.7). Roman papyri from the first century CE illustrate that olive presses were machines commonly composed of a press, mortars, and weighted wooden

beams.⁵¹ The *Geoponika*, a tenth-century Byzantine agricultural manual, describes the production of wine (Books 4–5), vinegar (Book 8), and olive oil (Book 9).⁵² This handbook includes a passage from Apuleius on how to make olive oil, and provides a detailed description of the use of mills and vats for production:

In the evening take the olives, sprinkle them with salt, put them in the mill (which must be clean) and mill them gently by hand. The olive stones must not be smashed, because the ichor from them will infect the oil. Turn the millstone gently and lightly so that only the flesh and skin of the olives are crushed. After milling take the crushed olives in small tubs to the press and add wickerwork mats . . . then press, employing light weight and no force. . . . Glass is best for storing olive oil because it is cold by

Archaeological Survey of the Eastern Galilee (Tübingen, 2009), 155–56; R. Frankel, *Wine and Oil Production in Antiquity in Israel and Other Mediterranean Countries* (Sheffield, 1999).

49 A similar large stone mill is found at Dayr Anba Hadra in Aswan. The mill is in room 82. U. Monneret de Villard, *Il monastero di S. Simeone presso Aswan* (Milan, 1927); idem, “Descrizione generale del monastero di S. Simeone presso Aswan,” *ASAE* 26 (1926): 211–45.

50 Cato (*Agr.* 18–22, 64–69 III–IIa), Pliny (*Nat.* 15.6.20–23), Columella (12.52.2–54.2). General references on archaeological contexts for presses include S. Wolffe, “Oleoculture and Olive Oil Presses in Phoenician North Africa,” in *Olive Oil in Antiquity*, ed. D. Eitam and M. Heltzer (Padua, 1996), 129–36; R. Frankel, “Some Oil Presses from Western Galilee,” *BASOR* 286 (1992): 39–71; L. A. Khalil and F. Mayyada al-Nammari, “Two Large Wine Presses at Khirbet Yajuz, Jordan,” *BASOR* 318 (2000): 41–57.

51 See *Chrest.* Wilck. 176 and 312; *P. Sorb.* inv. 2371; *P. Fay.* 95; *Stud. Pal.* XXX 177; *P. Oxy.* LI 3639. A. C. Johnson, *Roman Egypt to the Reign of Diocletian* (Baltimore, 1936), 364–69. A. G. Grachman, *Ancient Oil Mills and Presses* (Copenhagen, 1932).

52 *Geoponika: Farm Work; A Modern Translation of the Roman and Byzantine Farming Handbook*, ed. A. Dalby (Devon, 2011). Greek text ed. H. Beckh, *Geoponica sive Cassiani Bassi scholastici De re rustica eclogae* (Leipzig, 1895; repr. 1994).

FIG. 19.
South mill in food
preparation area
of Unit Q as seen
from the east. The
refectory is visible
to the south. A
large stone mill
used for grinding
olives can be seen
in the foreground.
(photo by Darlene
Brooks Hedstrom)



FIG. 20.
Unit Q, north and
south mills, view to
the south (photo by
Gillian Pyke)





FIG. 21.
Vat to collect oil in
food production area.
View to the west
(photo by Darlene
Brooks Hedstrom)

nature. . . . If you have no glass vessels, put the oil in new earthenware vessels whose insides have been covered with gypsum or *amorge*. Store them in a north-facing, dry room.⁵³

Apuleius's description presents olive processing that could be easily managed in the existing installations at the White Monastery.

Comparable excavated evidence of monastic oil presses from the Byzantine world illustrates that there are regional differences in the mechanisms used for pressing olives and the location of the installations in relationship to the monastery.⁵⁴ For example, at Horvath Beit Loya in Israel, the oil press was located in an open courtyard outside a church, within a village

monastery. The community also had a wine press twenty meters outside the precinct walls. In the case of the White Monastery, the presses are in specialized food preparation areas and were therefore apparently used regularly by monks assigned to the kitchen. At Aphrodisias in Turkey, the room for the Byzantine-period oil press was part of the town and was not in a monastic area. Despite this difference, the processing equipment and the physical room in which the facilities are located share similarities with those at the White Monastery.⁵⁵ The installation consists of several features, such as a storage vat, press bed, crushing basin, weight stones, and settling tanks. At Aphrodisias, a modified sarcophagus with a small drainage hole served as a settling tank to allow for virgin olive oil to be collected. Similar rectangular, plastered tanks appear in the area with the presses at the White Monastery.

Other industrial remains survive at the White Monastery. Grossmann has suggested that the "L-shaped building" (fig. 22), which is connected to the olive oil installation area, is possibly a limestone-paved facility for the production of *garum*, a condiment made from

53 *Geoponika* 9.19, trans. Dalby, *Geoponika*, 194–95.

54 For general studies of oil production see R. Frankel, "Presses for Oil and Wine in the Southern Levant in the Byzantine Period," *DOP* 51 (1997): 73–84; S. Hadjisavvas, *Olive Oil Pressing in Cyprus from the Bronze Age to the Byzantine Period* (Nicosia, 1992); D. Eitam and M. Heltzer, eds., *Olive Oil in Antiquity: Israel and Neighbouring Countries from the Neolithic to the Early Arab Period* (Padua, 1996); Ü. Aydinoglu and A. Kaan Şenol, eds., *Antik çağda Anadolu'da zeytinyağı ve şarap üretimi: Sempozyum bildirileri, 06–08 Kasım 2008, Mersin, Türkiye* (Istanbul, 2010).

55 Ahmet, "Byzantine Olive Press Room at Aphrodisias" (n. 48 above), fig. 4, p. 161.

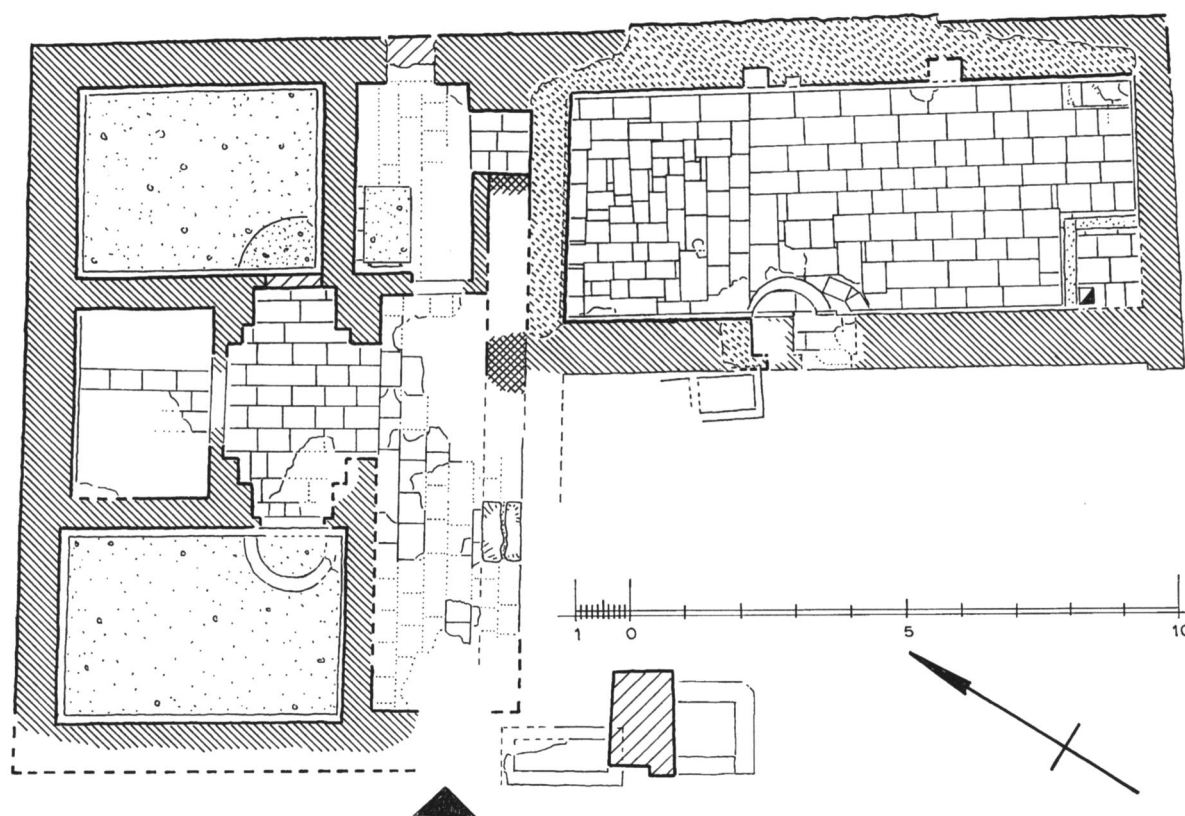


FIG. 22. Roofed food production area in L-shaped building complex (plan by P. Grossmann, in *DOP* 63 [2009]: 192, fig. 26)

fish and mentioned frequently in Roman and Byzantine texts.⁵⁶ The last entry at *Geoponika* 20.46 describes the production process for garum:

Fish entrails are put in a container and salted; and little fish, especially sand-smelt or small red mullet or mendole or anchovy, or any small enough, are all similarly salted; and left to pickle in the sun, stirring frequently. When the heat has pickled them, the *garos* is got from them thus: a deep close-woven basket is inserted

into the centre of the vessel containing these fish, and the *garos* flows into the basket. This, then, is how the *liquamen* is obtained by filtering through the basket; the residue makes *alix*.⁵⁷

In some cases the fermentation process could take up to two months, depending on the quality of the sauce. Comparable monastic evidence from Bawīt, both textual and archaeobotanical, shows that the monks were producing *salsamenta* (pickled fish) and possibly *garum*, and were responsible for fishing with boats and scoop nets.⁵⁸ Twenty percent of the 191 published ostraca from Bawīt make specific reference to salted fish. Analysis of fish substances in amphorae demonstrates that the monks were producing *salsamenta* by

56 R. Curtis, *Garum and Salsamenta: Production and Commerce in Materia Medica* (Leiden, 1991); T. Zahn, in *RE* 7.1 (1912): 841–49 s.v. *garum*; S. Clackson, “Something Fishy in *CPR* XX,” *APf* 45 (1999): 94–95; and W. Van Neer et al., “Salted Fish Products from the Coptic Monastery at Bawit, Egypt,” in Plogmann, *Role of Fish in Ancient Times* (n. 37 above), 147–59; N. Desse-Berset and J. Desse, “Salsamenta, garum et autres préparations de poisson: Ce qu’en disent les os,” *Antiquité* 112 (2000): 73–97.

57 Dalby, *Geoponika*, 348–49.

58 Van Neer et al., “Salted Fish Products,” 153–55.

alternating layers of salt and fish.⁵⁹ Salted fish is also evident at the Middle Egyptian sites of Shanhūr, a non-monastic settlement, and the sixth-century monastic site of Kom el-Nana.⁶⁰

In addition to the preparation of salted fish products and olive oil, it appears that there were facilities for milling flour at the White Monastery. However, according to Shenoute, the federation did not produce its own flour for making bread, but purchased it.⁶¹ The presence of the two south flour mills,⁶² if that indeed is what they are, would suggest that the needs of the monastery altered so much that it was necessary, or desirable, for it to produce its own flour, initiating a change in the habits and layout of the monastery after Shenoute's tenure (fig. 18). Excavations by the SCA in 2007 and 2008 revealed the bases of five ovens, which may have been used for bread. The ovens are on the western edge of Unit Q. Their location demonstrates that the industrial area of the settlement was well planned so that the heat from the ovens or kitchens would not affect other buildings. It is tempting to see this area as a part of the monastery set aside for the baking of bread, as Layton writes: "[T]he baking of bread apparently takes place in a special installation (bakery, 'place where baking is done' . . .) also called 'the ovens'."⁶³ The fuel needed for these ovens was likely easily available in the form of local organic by-products and also dung patties. We were not able to ascertain such remains in association with the oven features.⁶⁴

It may, in the future, be possible to find evidence of sugar, salt, wine, and vinegar production. Vinegar is mentioned in several monastic sources and appears

in the writings of Shenoute, but little information is included about its production.⁶⁵ Likewise the salting of food and the use of salt in the monastic diet was surely essential, although we know little about how it was produced in the late Roman world. From Wādī Sarga, a contract between the Monastery of Apa Thomas and a salt-dealer, Psynhor, stipulated a monthly delivery of salt to the community, for which Psynhor would be paid in food, wine, and other goods.⁶⁶ Sugar production might also have taken place at the White Monastery, since examples of medieval refineries are found at Crusader-period settlements in the Eastern Mediterranean, although we do not know whether this sweetener would have been permitted in the monastery in any period.⁶⁷ We also do not know whether access to particular food goods varied as the monasteries and their larger social and economic setting changed. For example, Shenoute prohibited the consumption of wine by healthy monks, although he did allow it for the sick.⁶⁸ Documentary evidence from late antique Egypt in monastic and nonmonastic contexts attests to the ubiquitous nature of wine as a form of payment for goods received and for medicinal care, as in the example above.⁶⁹ Were there changes in the rules of monastic consumption to the extent that by the medieval period Egyptian monasteries were actually producing wine? Certainly, by that

59 Ibid., 154.

60 Van Neer and Depraetere, "Pickled Fish" (n. 37 above); R. Luff and G. Bailey, "The Aquatic Basis of Ancient Civilisations: The Case of *Synodontis schall* and the Nile Valley," in *Human Ecodynamics: Proceedings of the Association for Environmental Archaeology Conference 1998 held at the University of Newcastle upon Tyne*, ed. G. Bailey et al. (Oxford, 2000), 100–113.

61 Layton, "Social Structure" (n. 3 above), 32, no. 30 cites Can. 6 XM463–64 = L.IV: 43. On page 33, Layton suggests that it could be possible that the monks did mill their flour.

62 L. A. Moritz, *Grain Mills and Flour in Classical Antiquity* (Oxford, 1958); K. D. White, *Farm Equipment of the Roman World* (Cambridge, 1975).

63 Layton, "Social Structure," 46.

64 W. Smith, "Fuel for Thought: Archaeobotanical Evidence for the Use of Alternatives to Wood Fuel in Late Antique North Africa," *Journal of Mediterranean Archaeology* 11, no. 2 (1998): 191–205.

65 See Krawiec's discussion of the use of vinegar and wine, which came from the men's monastery, and was used at the women's community: *Shenoute and the Women* (n. 2 above), 19 and n. 49.

66 "164: Contract for Work," in *Wadi Sarga: Coptic and Greek Texts from the Excavations Undertaken by the Byzantine Research Account*, ed. W. E. Crum and H. I. Bell (Copenhagen, 1922), 134–35.

67 M. L. von Wartburg, "Design and Technology of the Medieval Cane Sugar Refineries in Cyprus: A Case Study in Industrial Archaeology," in *Paisajes del Azúcar: Actas del Quinto Seminario Internacional sobre la Cana de Azúcar*, ed. M. Malpica (Granada, 1995), 81–116; M. L. von Wartburg and F. G. Maier, "Excavations at Kouklia (Palaeopaphos), 16th Preliminary Report: Season 1989 and 1990," *RDAC* (1991): 255–62, plates LXV–LXX; E. Ashtor, "Levantine Sugar Industry in the Later Middle Ages—An Example of Technological Decline," *Israel Oriental Studies* 7 (1977): 226–80; R. Ellenblum, *Frankish Rural Settlement in the Latin Kingdom of Jerusalem* (Cambridge, 1998).

68 Layton, "Social Structure," 45.

69 C. Vogt et al., "Notes on Some of the Abbasid Amphorae of Istabl 'Antar-Fustat (Egypt)," *BASOR* 326 (2002): 65–80; P. Mayerson, "The Enigmatic Knidion: A Wine Measure in Late Roman/Byzantine Egypt?" *ZPapEpig* 141 (2002): 205–9.



FIG. 23. Unit Q, view to east of the water distribution system with channels leading to the well of Shenoute (photo by Darlene Brooks Hedstrom)

time, Muslims wrote poetry about the beauty of monasteries and the wine consumed in them.⁷⁰

In Unit Q, one of the most impressive structures is the elaborate well. It is built upon bedrock, made primarily of fired bricks and limestone masonry. It was accessed from a staircase on the east side. The well is unusual because it has extensions, on the east and west, to its central square shaft; these extensions were designed to hold two *sāqīyas*, or water wheels, for the

transfer of water (figs. 23–25). Grossmann has already commented on the similarities between the plan of the well and that of the central unit of the triconch in Shenoute's church. Based upon these parallels and the care used in the construction of the well, Grossmann has proposed that it dates to the time of Shenoute.⁷¹ The importance of a well for the community is substantiated by the *Life of Shenoute*.⁷² In this text, the

70 Abu al-Hasan 'Ali al-Shabushtri, *Kitab al-Diyarat*, ed. G. 'Awwad (Baghdad, 1966), repr. G. Awwad, *Shabushtri's Book of Monasteries* (Piscataway, NJ, 2008); J. den Heijer, "Coptic Historiography in the Fatimid, Ayyubid and Early Mamluk Periods," *Medieval Encounters* 2 (1996): 67–98. See also I. Shahid, *Byzantium and the Arabs in the Sixth Century*, vol. 2, pt. 1 (Washington, D.C., 2002), 157–58.

71 Grossmann, "Second Report" (n. 5 above), 186–89.

72 N. Lubomierski has demonstrated that the *Life of Shenoute* was in fact not written by his successor Besa, but is compiled from many sources: N. Lubomierski, *Die Vita Sinuthii: Form- und Überlieferungsgeschichte der hagiographischen Texte über Shenute den Archimandriten* (Tübingen, 2007), 167–70 and eadem, "The Coptic Life of Shenoute," in Gabra and Takla, *Christianity and Monasticism in Upper Egypt* (n. 2 above), 91–98.

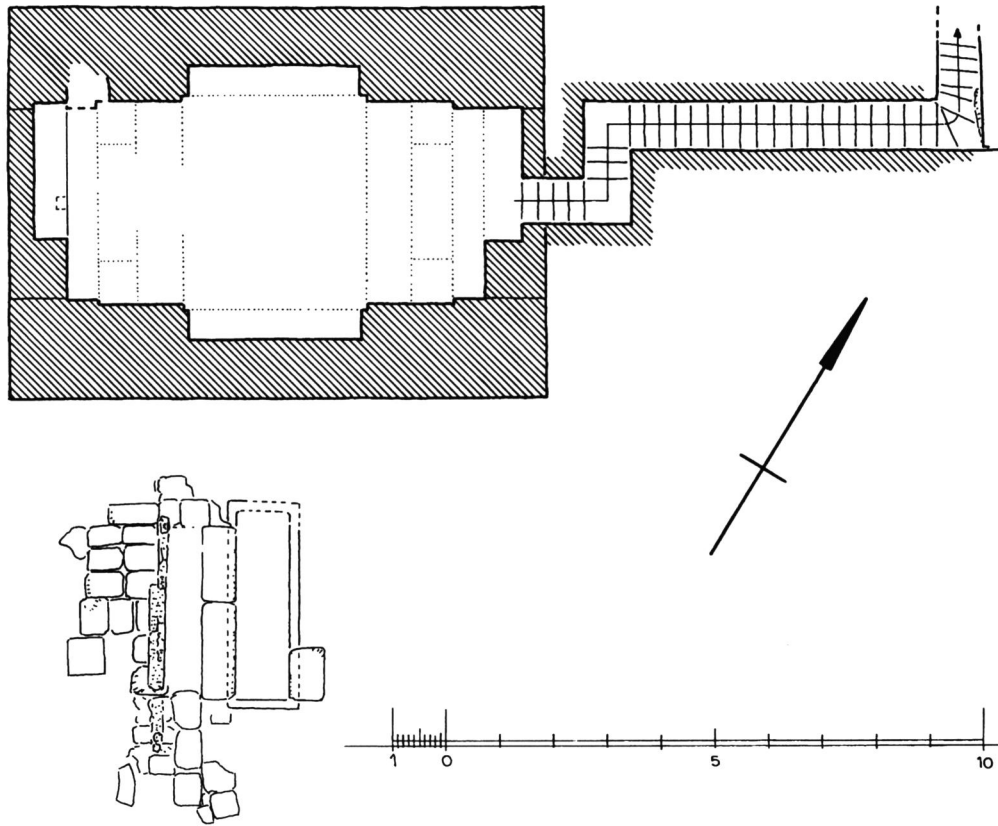


FIG. 24. Plan of the well at the White Monastery, showing the staircase on the east and the two saqiya extensions, located on the east and west sides (plan by P. Grossmann, in *DOP* 63 [2009]: 187, fig. 22)

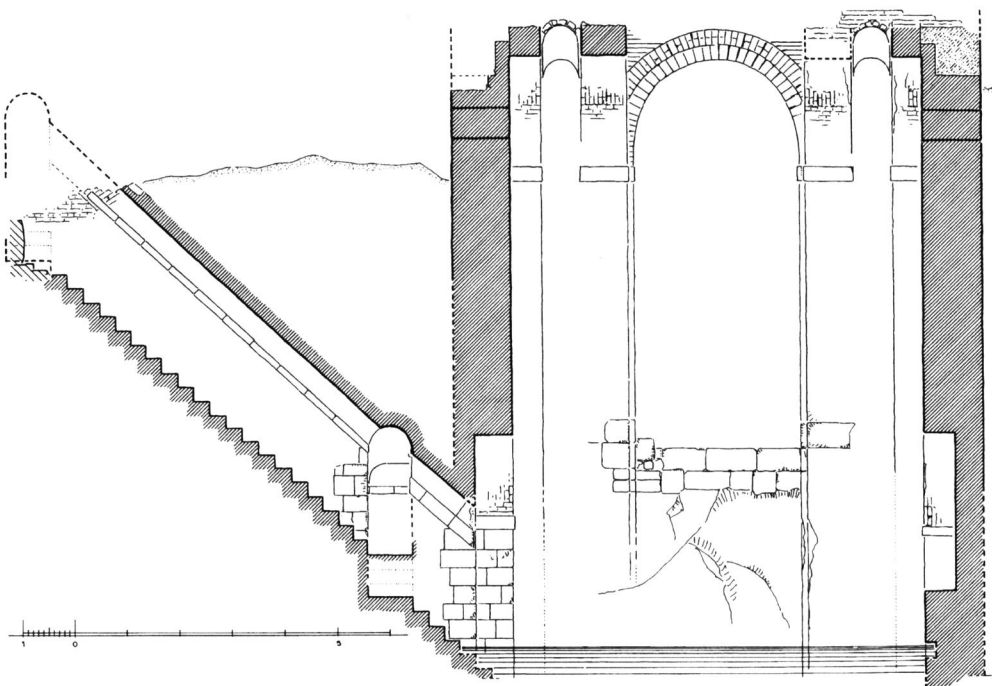


FIG. 25. Profile of the well showing two saqiya extensions flanking the arch on the east and west (left and right) sides (plan by P. Grossmann, in *DOP* 63 [2009]: 187, fig. 21)

FIG. 26. Well at the Red Monastery, view northwest. Note one of the two decorative stone niches lining the walls (photo by Darlene Brooks Hedstrom).



construction of a smaller well is mentioned.⁷³ It is also interesting that a similar plan is visible in the well at the nearby Red Monastery, also part of Shenoute's federation, although it differs from the one at the White Monastery in that it has two high decorative niches, lacks a dedicated staircase, and held only one sâqīya (fig. 26).

At both the White and Red Monasteries, extensive ceramic piping, encased in plaster and brick channels, extends from the wells across both sites (figs. 27–31).⁷⁴ In our survey map of the White Monastery, we included some of the ceramic piping that connects inspection tanks. These tanks are small rectangular containers with covered openings that allowed access to the subsurface piping, in order to facilitate the resolution of any problems with the movement of the water throughout the monastery. It is apparent that these

conduits were sloped to permit the movement of water across the site to various areas. However, excavation is needed, since the water delivery system has received very limited attention, though it is a prominent aspect of the site. If studied properly, this component of the monastery's settlement plan would help us understand the construction and later phasing of the modifications to the site and possibly also clarify the function of some areas that are still poorly understood. Additionally, a rectangular washing area with large granite blocks, covered with coatings of *opus signinum*, was placed to the west of the well. Several water channels turn into this facility and others carry water away from it. The stones slope toward the middle of the open square tank. The location of this facility and its large surfaces might suggest that fullers used it for the beating of wool or linen. Linen weavers and incidents including the washing of monastic clothing appear in the writings of Shenoute, Besa, and Pachomian authors.⁷⁵ We might also think of this as the communal area for the washing of clothes.

73 Besa, *The Life of Shenoute* (Kalamazoo, 1983), ch. 24. P. Grossmann, "Zum Grab des Shenute," *Journal of Coptic Studies* 6 (2004): 85–105.

74 L. Blanke is currently studying these systems for her dissertation, "Monasteries in Transition: Archaeological Perspectives on Changes to Monastic Communities with the Coming of Islam," at Carsten Niebuhr Department, Institute of Cross-Cultural and Regional Studies, Faculty of Humanities, University of Copenhagen.

75 Shenoute explains what may be exchanged for wool from outside vendors in *Canons*, book 6, XM 464–65. In *Canons*, book 9, BV 39, Shenoute lists linen as a product produced by the monastery and



FIG. 27. Map of water facilities from the northwest quadrant of Unit Q. Green represents features made of fired bricks. Grey represents stone paving. Light green indicates limestone plaster. Ceramic tubing is marked in red (map by Dawn McCormack and Darlene Brooks Hedstrom)



FIG. 28. Ceramic and red brick channels in White Monastery water installations, view to northwest (photo by Dawn McCormack)

FIG. 29.
Inspection
tanks and water
channels at White
Monastery,
view east (photo
by Dawn
MacCormack)



FIG. 30.
Inspection stone
tank and plaster
platform at Red
Monastery (photo
by Darlene Brooks
Hedstrom)





FIG. 31.
Modern inspection
tanks in use for
irrigated fields in
Sohag (photo by
Darlene Brooks
Hedstrom)

Conclusions and Questions

The work undertaken in 2005–2007 to map the extant remains of the White Monastery provides a foundation upon which further archaeological excavation, ceramic analysis, and comparative readings of existing remains with other monastic settlements in Egypt, most notably the Red Monastery, can be based. A 2011 survey at the Red Monastery to document the existing archaeological features, which are substantially less plentiful than those at the White Monastery, shows considerable parallels. These include a monumental well, a complex water installation system, inspection tanks, and several features with numerous layers of plaster for waterproofing.⁷⁶ The ability to examine the structure of these installations within the monastic complex is an important opportunity to look beyond the monumental architecture that is so often the focus of large-scale projects. This evidence enables us to reconstruct

the complex urban planning skills needed to create a settlement with such facilities.

Observations of similar construction methods and architectural features for some structures in Unit Q point toward a building phase in the fifth century, associated with Shenoute and Besa. However, most of the visible features indicate three or more phases of modifications, and expansion in the seventh and eighth centuries.⁷⁷ Excavation in specific areas is needed to gain stratigraphic evidence for the monastery during the transition to the Arab period, its use during the Middle Ages, and its eventual decline. In addition to the work at the White Monastery, recent excavations at Umayyad and Fāṭimid sites such as Tebtunis, in the Fayyūm, will continue to provide a broader archaeological base for comparative analysis of hydraulics, agricultural history, food preparation, and areas of specialized

sold. In *Canons*, book 3, YA 257–58, monks participate in the washing of clothes in the cistern.

76 L. Blanke and G. Pyke, “Preliminary Report on the Mapping of the Archaeological Remains Spring 2011,” internal report, 2011.

77 For an example of changes to structures in the food preparation area, see the discussion of the vats, whose precise function is still elusive, in Grossmann, “Second Report” (n. 5 above), 199–202.

labor.⁷⁸ All four of these topics have received some treatment in the textual analysis, but only now are they beginning to receive attention in the archaeological recording of monastic sites. Given the uneven nature of the archaeological documentation of the late Roman, Byzantine, and Islamic evidence in Egypt, the White Monastery remains an essential site for our understanding not only of the late fourth- and fifth-century world of Shenoute but also for the later periods. The longevity of the monastery and the fame of its early leader makes it central to the history of monasticism in Egypt.

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78 C. Gallazzi and G. Hadji-Minaglou, *Tebtynis: Les habitations à l'est du Temple de Soknebtynis*, vol. 4 (Cairo, 2000).